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MODERN SCEPTICISM,

VIEWED IN RELATION TO

MODERN SCIENCE.

MODERN SCEPTICISM,

VIEWED IN RELATION TO

MODERN SCIENCE;

MORE ESPECIALLY IN REFERENCE TO THE DOCTRINES OF

COLENZO, HUXLEY, LYELL, AND DARWIN,

RESPECTING

THE NOACHIAN DELUGE, THE ANTIQUITY OF
MAN, AND THE ORIGIN OF SPECIES.

BY

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PREFACE.

It is the aim of several recent publications of great notoriety to show that certain of the more momentous statements of Scripture are inconsistent with physical truth. And the writers of them arrive at this conclusion under the guidance of what they affirm to be the light of sound reason, and well-established science.

Any conclusion thus reached is assuredly entitled to acceptance; and, by many persons, that just adverted to has been accepted; but purely on the faith that the reasoning and the science are actually what they profess to be, and not, as they really are, spurious imitations of the genuine commodities, the worthlessness of which would be discoverable by submitting them to the test of a scrutinising examination.

Some, from sheer indifference, decline the trouble of this examination:—the controversy is a subject in which they take no interest, and in the issue of which they feel no personal concern. Others, from long-cherished convictions,—perhaps long-cherished prejudices, having inherited their religious belief as they have their surnames, contentedly carry both through life, without any inquiry as to the origin of either; and,

despite the force of reason and common sense, would as soon think of changing one as the other.

To neither of these classes of persons are the following pages addressed, for by neither would they be read. They are submitted to readers of inquiring minds—to those who would reverently follow the leadings of TRUTH, however humble the garb in which she presents herself, rather than obey the dictates of authority, though “arrayed in purple and fine linen”:—to those, in fact, who would not only give a reason for their faith, but also a reason for their *unfaith*.

I can conscientiously say that I have written this small volume purely and exclusively in the interest of Truth. I applied myself to the publications adverted to above, solely for the purpose of instruction; and in the expectation that much which I had previously regarded as Divine Truth would have to be considerably modified, if not wholly abandoned as untenable. The perusal has very agreeably disappointed me. I say it has *agreeably* disappointed me; for however ready every honest mind must be to resign fictions for facts, it is nevertheless provoking to discover that all of past life has been spent in paying that homage to error that is due only to truth. A traveller wandering along the wrong path is, of course, grateful for being put right; yet he cannot but regret the profitless outlay of time and exertion which he has been beguiled into expending.

That the Bible contains “things hard to be under-

stood," the Book itself expressly forewarns us. But whatever of these hard things may have perplexed my own mind, I can truly say that the sceptical writings examined in the following pages, have greatly contributed to dissipate obscurity, to confirm previous conviction, and to strengthen faith. For the most part, they oppose the Scriptures on what they allege to be scientific grounds; but it only requires that they be read with that scepticism with which they were written—and which in *scientific* discussions is a laudable scepticism—in order to discover that they are only "the oppositions of science, falsely so called."

This allegation it is my purpose to establish in the present volume; and it is my *sole* purpose. I do not attempt to prove affirmatively, by physical science, the truth of any part of Divine Revelation; such an attempt would be as ridiculous as it would be presumptuous. I have to do solely and exclusively with the arguments advanced to prove the negative: if these arguments are tenable, the subject-matter of them is damaged: if they are untenable, it remains unaffected by them. Revelation neither invokes human science to confirm its truths, nor does it challenge human science to disturb them. It does not stoop even to notice science at all; and in thus not deigning to regard it, silently declines its feeble support,—and as silently defies its puny opposition.

The present work is divided into five sections, the first of which is to be regarded as a general introduc-

tion to what follows: the next three sections are devoted to an examination of Bishop Colenso's book *On the Pentateuch*, in so far at least as the Mosaic narratives are impugned upon what the author affirms to be scientific grounds. And I think I have shown that the Bishop's science—his logic—and his general literary integrity, are upon a par, being all equally untrustworthy.

In the fifth section, I have endeavoured to convey to the general reader what I believe to be correct views of the authority of physical science,—what is its real scope, and what are its limitations. Exaggerated notions are often entertained as to the absolute finality of its decisions, even in reference to the physical causes it assigns for the phenomena with which its investigations are occupied. It is thought, by many, and they act upon the impression, that if any physical cause be propounded which men of science generally receive and adopt, such general adoption is evidence sufficient that it must of necessity exist in the natural world; and that what opposes *it* would oppose nature. They believe that a physical principle which has thus received the sanction of physical science, can never be wrong; little suspecting that it may be fairly questioned whether any such principle is ever right.

I cannot but think that this popular error has been encouraged and taken advantage of by writers who, in pitting science against Revelation, wish every spectator of the conflict to come pre-possessed with the conviction that the assailant wields only the weapons of

unerring truth,—think what he may of the power attacked: that anything like retaliation would be futile; for what vulnerable spot can there possibly be in the well-compacted armour of SCIENCE?

I have considered it therefore to be a duty, in reference to these erroneous impressions, and to the main purpose of the present undertaking, to enter at some length upon this question of the absolute authority of everything that goes by the name of physical science; and to discriminate between what in its teaching is *known* to be true, and what is only *supposed* to be true. Suppositions, whether in physical science or in anything else, may be right or wrong.

Physical theories, or hypotheses, when limited to, and suggested by, the observed phenomena they are contrived to explain, are perfectly allowable, and indeed necessary to the progress of science; but then well-ascertained facts must always precede what in this way is offered to account for them. Nothing can be more unscientific than to frame theories first, and then to hunt up facts to be forced into conformity with them:—these must precede, not follow the invention of hypotheses.

And it is this reversal of the procedure which genuine science always enjoins, that is the prevailing vice of much of the spurious science of the present day. Imagination supplies a theory which, if true, must inevitably unsettle convictions, and disturb beliefs, in reference to matters which real science acknowledges to be beyond its own restricted domain. A few things

—very few—are discovered which appear, as far as they go, to be in accordance with this theory. So far so good. But the theory itself comprehends a great deal more ; and upon the strength of one or two facts, not contradicting it, we are called upon to accept it *as a whole !*

The theories about the antiquity of Man, the origin of species, and the descent of the human race from apes and baboons, are all of this character. I have devoted a considerable portion of the fifth section to the task of shewing such to be the case. The theories themselves, though exciting so much attention at present, are by no means new : they are but revivals of old fancies, entertained by a few even English writers long ago. The ape-descent doctrine was a favourite speculation of Lord Monboddoo, in the last century, and the author of the well-known *Botanic Garden*,—an ancestor of the present Mr. Darwin—was an advocate, equally with the latter distinguished naturalist, of the doctrine of the evolution of the highest organisms from some far inferior and far remote life-germ.

I think it may be reasonably questioned whether the supporters of these odd theories are really convinced of their truth themselves. A firm belief in them is scarcely consistent with practices which they countenance. They approve of the slaughter of Gorillas ! But, if actuated by their creed, with what profound respect ought not civilized men (more especially men of *science*) to regard the Gorilla ! And yet M. Du Chaillu, instead of reverentially raising his

hat to him, when meeting with him in the neighbourhood of the Gaboon, actually shot him,—and even boasts of the unnatural crime! How is it that the fratricide's Gorilla-blood did not warm towards his respectable and unoffending kinsman?

Theory and practice, however, are sometimes at variance in matters of equal importance; and the advocates of the Ape-descent theory may be in earnest after all,—as much so as were the early searchers after the Elixir of Life, and the Philosopher's Stone. But it may be safely predicted that all attempts to educe MAN from the brute, will be about as successful as were those of the Rosicrucian Philosophers to transmute the baser metals into GOLD.

J. R. Y.

March, 1865.

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MODERN SCEPTICISM

IN RELATION TO

MODERN SCIENCE.



SECTION I.

PRELIMINARY OBSERVATIONS.

AN unprejudiced reader of the sceptical productions of the present day cannot but be surprised at the infirmity of reasoning which pervades them.

One is continually bewildered with logical puzzles and paradoxical assertions; and with contradictory doctrines and assumptions, not merely inconsistent with scientific truth, but repugnant to common sense.

The writers of these works recognize the existence of a Supreme Being—the Creator of heaven and earth; and, as such, they profess to believe that the worlds they contemplate were brought into existence out of

nothing, and by the mere fiat of His WILL*: that He communicated to them their initial movements, and impressed the physical laws in obedience to which those movements are continued, and the stability of the planetary system maintained. How any man can give unhesitating assent to the truth of these astounding positions:—that the worlds around him were produced without any physical material, that they were put in motion without any physical impulse, that they were endued once for all with an all-pervading principle, in virtue of which they present a vast self-governing machine, every part of which so moves that, in the absence of external interference, any permanent derangement of the system is demonstrably impossible:—we say, how any man can accept these truths, and yet, at the same time, declare his belief that the Being whose WILL *alone* accomplished all this has not *power* to do as he pleases with what he has thus created;—how he can openly avow *both* these as articles of his theological or philosophical creed, is a psychical phenomenon hard to account for on any other hypothesis than that of mental obscuration.

He who maintains that matter never had a Creator, that Nature and its laws never had a beginning, is

* Although we here adopt the usual phraseology, “created out of nothing,” the language is objectionable, as it seems to imply the pre-existence of that *out of* which, as out of a real material, something was formed. This was noticed long ago by Dr. Samuel Clarke, in his *Demonstration of the Being of God*. He observes that “the true notion of creation is not a forming something *out of* nothing, as out of a material cause, but only a bringing something into being, that before had no being at all.’

logically justified in rejecting "the hypothesis of a God." But it is certainly a very paradoxical feature in the books alluded to, that the writers of them unhesitatingly receive this hypothesis—that they have faith sufficient to admit as true the most mysterious and inconceivable proposition that was ever propounded, and yet are so incredulous as to reject as false another proposition, immeasurably *less* mysterious and inconceivable, and which, in fact, is nothing but a corollary fairly deducible from the former.

Every man of unclouded intellect must regard as truisms the positions that the Being who has WILLED the creation of matter out of nothing can will its annihilation; and that He who has given it motion can also give it rest; for the exercise of power or will in the one case, is but the exercise of the same power or will in the other, in the opposite direction.

Those who admit the truth of certain miraculous events recorded in Scripture, and at the same time deny the truth of other like events, as clearly and as emphatically declared in the same Record to be historical facts, and to have been due to the very same agency, argue upon a most capricious and illogical principle. From a group of recorded occurrences, all equally declared to have been supernatural, they make an arbitrary selection; and, in direct contradiction to the Record, treat these as if they were affirmed to be, not supernatural, but natural occurrences; and labour to show that physical science is inadequate to account for them. And, in thus concluding, they affect not to see—and

expect other people also to be blind to the fact—that they are actually verifying instead of falsifying the declaration of the Record; inasmuch as they shew that nature alone could not possibly have done what is expressly declared to have been supernatural.

The line of argument they adopt is this:—A certain work is said to have been performed: there are but two agents, A and B, vastly differing in power, to one or other of which, independently, or to both, conjointly, the performance must necessarily be attributed. It is proved that the inferior of these agents, B, is, *alone*, incompetent to the task: not a word is said about the superior agent, A:—he is silently ignored; and the conclusion is, that the work in question is of impossible performance; whereas everybody of undistorted intellect must see that the logical conclusion is, that the work, if performed at all, must have been performed either by A alone, or by A and B together.

A specimen of this kind of reasoning we have already given at page ix. of the Preface to a former volume.* It is recorded in the Bible that the vast hosts of the children of Israel, young and old, were suddenly summoned to flee out of Egypt under circumstances of appalling danger and difficulty: the physical powers of the people, and the physical obstacles to be surmounted, were such as to render such a flight, without external aid, impracticable. But the story relates that they were conducted by *JEHOVAH*. Bishop Colenso tries the experiment on a small scale with forty people, led by

* *Science Elucidative of Scripture.*

himself, and he fails; and thence concludes that the scriptural statement is "utterly incredible and impossible."* If a writer feel himself justified in denying the possibility of a *revealed* fact—whether it be the Exodus of the Israelites, the Deluge, or the miracle recorded in the Book of Joshua, on the ground that it is contrary to Nature, or to the principles of physical science; why in common fairness and consistency, does he not, on the same ground, reject similarly mysterious *unrevealed* facts, equally contrary to Nature and to physical science? If it be contrary to physical principles that a moving world should ever have been *stopped* in its orbit, it is equally contrary to those principles that it should ever have moved in an orbit. If it be contrary to physical principles that it should ever be destroyed, it is equally contrary to them that it should ever have been created. Can the motions of the earth be accounted for on physical principles alone? To what physical principle is its diurnal rotation referable? Whence came the initial projective impulse, without which its orbital course round the sun would have been physically impossible? To these questions science can give no answer; as every tyro in science well knows.

* The following is the Bishop's experimental proof of this impossibility (Part I., p. 61):—"Remembering, as I do, the confusion in my own small household of thirty or forty persons, when once we were obliged to fly at dead of night, having been roused from our beds with a false alarm that an invading Zulu force had entered the colony, had evaded the English troops sent to meet them, and was making its way direct for our Station, killing right and left as it came along, I do not hesitate to declare this statement (Exod. xii., 37, 38) to be utterly incredible and impossible!"

But writers who thus talk about supernatural events being contrary to physical principles, use "words without knowledge." It is not because a subject is apart from, and above the reach of physical science, that it is, therefore, adverse to it. Be the subject what it may, it is unquestionably entitled to our acceptance only in so far as it is true. And if it be not a department of physical investigation, its truth or falsity can never be tested by an appeal to physical laws. If, however, claiming an exemption from the operation of these laws, or only a partial exemption, it nevertheless embraces among its declared facts dogmas or principles which are in direct opposition to clearly ascertained scientific truth, the so-called "facts" must unquestionably be rejected as so many fables or myths; because it is impossible that any one truth can ever contradict any other truth, how diverse soever the sources whence the two are derived.

The movements of every machine of human contrivance are all in obedience to physical laws. The constructor plainly foresees that such must be the case; and he so disposes the several parts of it that, in obeying these laws, the machine may, at the same time, carry out his own intentions and purposes: these were settled and determined before the machine was, as it were, delivered over to the more complete authority of physical laws. *These* could not have formed the wheels, cut the teeth, or adjusted the levers. Every machine embodies in itself the evidence of two totally distinct agencies; agencies which, though thus

distinct, have nevertheless operated throughout the construction in complete concert, and (so to speak), with entire singleness of view to the object to be accomplished. The intellect and will have shaped and arranged physical nature's raw materials; and, thus modified by mind, the matter is then returned to nature, whose forces are ready to give motion and activity to what, without her immaterial coadjutor in the work, would have ever remained at rest.

No machinist ever does knowingly anything himself that material nature alone can do for him: he sometimes does so unwittingly, from ignorance of the extent of her powers, but not otherwise. Thus, in the earlier contrivances for the Electric Telegraph, the conducting wire was made to complete a circuit, and to return to the battery; but it was afterwards discovered that the returning portion of the wire might be dispensed with, that nature alone could do half the business, and that for this half artificial aid was therefore superfluous: such aid was in consequence at once withdrawn.

We may reasonably presume that the Almighty architect proceeds in a way analogous to that of his feeble image. The Divine Mind supplements the laws he has impressed upon matter—not by enlarging those laws, but by adding to their operations his own direct acts. But he thus interposes only when the laws of nature, left to themselves, are inadequate to accomplish his purposes: *they* cannot create matter, nor even control its impressed movements beyond the limits of their prescribed jurisdiction—they are not

almighty. He who is Almighty—the Supreme Mind, cannot be in subjection to material laws, or hindered, by their imperative and coercive demands, from doing whatever he wills to do with what he has created; although, in so far as we know, he never has willed the abrogation—or as the phrase goes—“the violation,” of any natural law whatever. In the special manifestations of His power, in the regions of Nature, he has never done more, that we know of, than what, on a scale proportionate to the vastly inferior power he possesses, man himself does with the material things around him. The human hand, in obedience to the human will, takes of these things, and produces with them combinations and arrangements which the laws of material nature alone could never have produced; and yet without the slightest infraction of any of those laws. Man has never infringed physical law, solely because he has not the power. God, in so far as we know, has never infringed it, solely because He has not willed to do so. A miracle is no such infringement: it is something either wholly apart from nature, a thing that nature has neither power to perform nor power to oppose; or else it is something brought about by the exercise of supernatural power, in the use of natural agencies, as instruments, or means, to the predetermined end.

Whatever the Deity wills to take place does take place; and, if he so please, instantaneously. Neither nature itself, nor man's operations upon it, can produce *instantaneous* effects. Natural and artificial

operations all require for their performance *time*, the element with which God's acts alone can dispense. If light is to be produced by his direct fiat, it is produced *at once*, in whatever part of the universe its presence is commanded: if its production is to be the delegated office of a physical agent (the sun), that agent requires eight minutes to illumine the earth. "He created light and the sun"—light first, and the sun afterwards.*

But although the *creative* acts of Deity are always instantaneous, and although time is never an indispensable requisite with Him, yet He is not precluded from the use of time. We say that the *creative* acts of Deity must *always* be instantaneous, because in the passage from nothing to something the idea of progress—of the successive steps of a *process*, is necessarily excluded. There cannot be development or growth from an absolute nonentity, but only from some pre-existing germ, or material principle. The bringing into being that which before (no matter how short a time before) had no being at all, must necessarily be an instantaneous act: there is no *room* for the interposition of time. But certain supernatural opera-

* Modern philosophers have concluded that what we call *light* is not an emanation from a luminous body, any more than sound is an emanation from a sonorous body. There is a luminiferous medium in the one case, and an aerial medium in the other. Light is produced by undulations of the luminiferous *ether*; sound by undulations of the air. The creation of the material (the ether) preceded that of the physical agent (the sun) which was to act upon it, as it is reasonable to suppose would be the case. (See on this subject the author's *Science Elucidative of Scripture*.)

tions, like natural or artificial processes, *may be* gradual. It may please the Supreme Being to manifest His power in nature in an especial manner by continuous action, the effect of which may be a progressive advance, clearly discernible, towards a climax as clearly pointed to, and ultimately inevitable, unless the operating Power be withdrawn. This ultimatum may be some overwhelming calamity, the infliction of which may be thus delayed purely in forbearing mercy and tenderness towards those upon whom it is threatened, and from whom it may yet be averted, upon certain conditions complied with on their part, before those progressive operations culminate in the catastrophe to which they manifestly tend.*

Indeed, what we call natural catastrophes may not always be the uncontrolled or spontaneous operation of mere physical causes. Though not in the *strictest* sense, miraculous or supernatural, yet nature's agencies, by superior power, even by human skill, may be diverted from their wonted directions, conducted along

* "At what instant I shall speak concerning a nation, and concerning a kingdom, to pluck up, and to pull down, and to destroy it. If that nation, against whom I have pronounced, turn from their evil, I will repent of the evil that I thought to do unto them."—Jeremiah xviii. 7, 8.

This passage is not quoted here in order to justify the statement above, since in the present preliminary article nothing is considered to be advanced but what reason and observation authorises, independently of any appeal to Scripture. But in the following section, on the Deluge, this and similar texts sanction the view there taken of the progressive character of the "flood of waters."

a prescribed path, concentrated on an indicated spot, and there be left to work their natural effects.*

In no region of the earth where civilized men have congregated have the features spontaneously impressed upon the soil by nature been allowed to remain unmeddled with. In many places man has entirely obliterated those features, and by his own power has compulsorily led nature, *forced* nature, to assume a different aspect: impediments which nature had opposed to the accomplishment of his designs, he has removed out of his way: he has levelled hills, and tunnelled rocks; diverted the waters out of the channels nature had prepared for them, and caused them to flow in those of his own construction; irrigated arid wastes, and fertilized sandy and barren deserts: has, in fact, subjugated nature to his own purposes; taking the materials she has supplied, and determining where they shall act, and germinate, and fructify, even in the desolate places, where she herself had made no provision for plant to sprout, or flower to bud.

If mere man does all this with nature, "how much

* In speaking of an act as "not in the strictest sense miraculous or supernatural," we merely mean to discriminate between what Supreme Power performs at once, by an act of volition, and what the same Power brings about by employing, as instruments, the agencies and forces with which He has already endowed nature. In the one case, nature is superseded; in the other, subordinated.

We may further remark here, that whenever we speak, as above, of the "spontaneous operations" of nature, we are not to be understood as implying that anything like volition resides in mere matter; but only that the laws, impressed upon matter by the Creator, are left unimpeded and uncontrolled in their operations.

greater things" may not man's Creator do? Luxuriant vegetation, flourishing above an originally and a naturally sterile surface, is not less a natural phenomenon, because the hand and skill of man are traceable in it; nor are the storm and the earthquake less natural phenomena, though a superior power may give them determinateness, as to time and place; and by using the agencies already prepared to His hand, and by His hand, may intensify or mitigate their violence as He pleases. In either case the observed phenomenon is strictly referable to a physical cause, this being its immediate antecedent.

We are not here affirming, however, that every one who perishes by shipwreck, or earthquake, or lightning, or inundation, is the object of Almighty vengeance, or that these, and such like calamities, are "judgments," as they are called. All we say is, that the agencies of nature, which man even can make subservient to his purposes, *can* be employed, as instruments, by the Deity, to accomplish *His* purposes, and that, too, without any violation of the laws He has impressed upon matter.

Why, in carrying out these purposes, usually themselves altogether inscrutable by us, destruction of life should be permitted, is a question which man can never answer, and one on which it ill becomes him, in his utter ignorance, to dogmatise. Nevertheless, we must not close our eyes to the fact, that God, if He so please, can exercise an infinitely greater command over the agencies of nature than man can do. Nature,

left to itself, does not manufacture gunpowder, for instance, though it supplies to man all the materials. And if *he* can collect and combine these to suit his own purposes in a way that nature alone could never have done, surely Divine Power can exercise an authority immeasurably more extensive over *the same* materials.

No man in his senses can maintain that He who created the materials cannot afterwards use them; while he who cannot create *one*, can nevertheless use them *all*.

And it is very important to notice, in the arguments of such writers as Dr. Colenso, that what they avowedly aim at proving is, not that certain alleged interpositions of supernatural power in the region of nature never *did* take place, but that they never *could* take place—that the declared events are *impossible*.

Those who read the works here alluded to, have their minds continually thrown into a state of bewilderment and perplexity by such assertions as this. The authors use a term of all-importance in their discussions, in a sense widely different from its general acceptation, and that, too, without the slightest warning as to the arbitrary limitation under which they themselves are pleased to view it. What does Dr. Colenso really mean by the term "God"? An *Omnipotent* Being he certainly does *not* mean. What *does* he mean? In mere logical fairness, and straightforward candour to his readers, he ought to feel it to be his duty to answer this question; and his uniform silence

in reference to a matter of such paramount moment, in its bearings upon the doctrines he inculcates, looks very like a wily concealment of what, if revealed, would destroy the *sale* of his books among all but persons of atheistical tendencies.*

Our inability to conceive *how* the Deity can direct as He pleases the agencies of material nature, arises solely from the limited range of all our powers and faculties—even of our power of conception. We cannot adequately conceive how Mind alone, without the intervention of material instruments, can operate upon Matter. We feel that without bodily organs—even without the hand and the eye—man would be

* The most explicit statement of Dr. Colenso's Theism, which the present writer can find in his work, is contained in the three propositions following (Part IV., p. 3):—

1. God is the Creator and Preserver of all things.
2. Man is made in the image of God.
3. All that God has made is very good.

These, he says, are the "great principles which the pious writer of this chapter (Genesis i.) lays down distinctly, amidst all his speculations upon the construction of the universe."

The above propositions, no doubt, embody the truth, and nothing but the truth; though certainly not the whole truth. The whole truth respecting the Supreme Being is not comprised in the first chapter of Genesis. The God of the Jews and Christians can do more than create and preserve: He can destroy, as well as create; modify and re-arrange, as well as preserve. St. Peter characterises as "scoffers," and "willingly ignorant" of what God has actually done, those who say—"Since the fathers fell asleep, all things continue as from the beginning of the creation." People in general, including *all* who receive the Scriptures, regard "God" and "Omnipotent Being" as interchangeable terms. Dr. Colenso does not so regard them; and we think he owes it to his readers to declare distinctly to what extent *his* God is shorn of the unlimited power thus attributed to the God of Revelation, by both Jews and Christians.

comparatively powerless in reference to his command over the external world, even though his mind were of a far higher order than it is. Yet we know that to the Supreme Mind there cannot be attributed any connection with bodily organs. We say we *know* this; for the *creation of matter* necessarily implies the non-existence of its antecedent presence *anywhere*; it implies, therefore, the non-existence of material organs in its Creator. And even if by the creation of matter were to be understood merely the creation of what was *external* to the Being (imagined to *have* material parts) creating that external matter, yet hands could never be employed where there was nothing to handle, nor eyes where there was nothing to see.

The Creator of matter, therefore, God, must be an immaterial, and, consequently, an invisible Being; and if an immaterial Being can *create* matter, the same immaterial Being can surely deal with it afterwards.

It is certainly hard to conceive of *habitation* or locality, as respects such a Being; but it is also hard to conceive the same in reference to the immaterial principle within ourselves. Even in physical nature we are surrounded by what is wholly inconceivable, though not the less true. There resides, in the sun and planets, an influence in virtue of which each one affects all the others, and all the others that one—a governing and coercive influence. We *call* it GRAVITATION; but, in reality, we know nothing about it beyond its effects. What this mysterious inhabitant of matter essentially is, and how it exerts its powerful and im-

perative influence over remote bodies with which it has no visible connection, we are profoundly ignorant. It is the same with the other of nature's great agents—electricity, magnetism, and even light. Of these we *know* absolutely nothing beyond the phenomena presented to our observation. We speak, indeed, of the electric *fluid*, the magnetic *fluid*, the luminiferous *fluid*; but these are terms invented rather to conceal our ignorance than to proclaim our knowledge; and no man of science ever uses any one of them as truly descriptive of the real essential character of the phenomenal cause.

In every department of scientific research—whether physical or metaphysical—phenomena *alone*, addressed either to our outward senses or to our inward consciousness, comprehend the whole of the perfectly secure materials out of which man constructs his systems of philosophy. All beyond, whenever he ventures beyond, is but speculative inference and conjecture.

By repeated observation, or repeated experiment, the philosopher becomes satisfied that certain natural phenomena brought under his notice—to whatever department of physical enquiry he directs his attention—have such characteristics of order, and invariable connection of antecedent and consequent, as to clearly imply some constant originating principle or agency to which those phenomena may be referred as their physical cause. Often, however, he has to seek for such a cause in his own mind; and what nature refuses to

disclose to him he is left to supply, as best he may, by mere hypothesis and ingenuity of invention. His hypothetrical cause must, of course, be a *possible* cause ; and if it prove to be the *real* cause, all the phenomena will naturally flow from it. They may, however, all be only *logical* consequences of an hypothesis which, in reality, nature would reject, if offered, so to speak, to her acceptance ; and ages may elapse before it can thus be brought to the test. Witness how many centuries passed during which even the common phenomena of day and night were referred to a wrong cause, and during which the rise of water in a common suction pump was attributed to nature's abhorrence of a vacuum.

We presume that every unprejudiced reader will yield his assent to what has now been advanced. The *facts* stated are indisputable ; and the observations with which they have been connected will, we think, be regarded, in the main, as at least reasonable. Keeping these before the mind, we now proceed to consider the scriptural account of the Deluge.

SECTION II.

THE DELUGE.

It will have been observed that not a single principle or doctrine, derived from Holy Writ, has been introduced by way of authority for any of the foregoing statements, except, indeed, the fundamental truth of the existence of an All-powerful Being. To the candour and common sense, therefore, of every one not an atheist, they equally appeal, whether he be a believer in Scripture or not.

We now refer to the BIBLE; and without assuming anything, either one way or the other, as to the inspired character or historical accuracy of “the story of the Flood,” proceed to inquire whether there be any inherent impossibilities, or contradictions, in the recorded events:—whether, in fact, there be anything in the narrative to justify such a comment as the following:—

“While translating the Story of the Flood, I have had a simple-minded, but intelligent native—one with the docility of a child, but the reasoning powers of mature age—look up, and ask, ‘Is all that true? Do you really believe that all this happened thus,—that all the beasts, and birds, and creeping things, upon the earth, large and small, from hot countries and cold, came thus by pairs, and entered into the ark with

Noah ? And did Noah gather food for them *all*,—for the beasts and birds of prey, as well as the rest ?’ My heart answered, in the words of the Prophet, ‘ Shall a man speak lies in the name of the Lord ?’ (Zech. xiii. 3.) I dared not do so. My own knowledge of some branches of science, of Geology in particular, had been much increased since I left England, and I now knew for certain, on geological grounds, a fact, of which I had only had misgivings before, viz., that a *Universal Deluge*, such as the Bible manifestly speaks of, could not possibly have taken place in the way described in the Book of Genesis, not to mention other difficulties which the story contains.”*

The story here referred to records the following events :—

1. That because of the general wickedness and depravity into which rebellious man had sunk, God had communicated to Noah, “ a preacher of righteousness,” his resolve] to bear with this rebellion no longer than for the space of 120 years more; at the expiration of which time, if no signs of repentance were manifested, the whole sinful race should be destroyed by a flood of waters ; he alone and his family escaping from the calamity.

2. That man’s destruction should also involve the destruction of every living thing ; save only such as, by God’s command, were to be preserved with Noah.

3. That also at God’s command Noah prepared an Ark, to serve as a floating receptacle for all that were

* Colenso on the *Pentateuch*, part I., preface.

to be saved: the construction of which Ark advanced by very slow degrees, occupying very nearly the whole of the 120 years which God had resolved to wait; and beyond which His forbearance was not to extend. "His long-suffering *waited* while the Ark was preparing."

4. That seven days after the Ark had received the animals—"of all flesh, fowls after their kind, cattle after their kind, and every creeping thing of the earth after his kind"—and Noah and his family had entered in, "the waters of the flood were upon the earth" on which the Ark had hitherto rested. "And rain was upon the earth forty days and forty nights;" at the end of which time the waters had sufficient depth to float the Ark.

5. That "the waters prevailed exceedingly upon the earth; and all the high hills that were under the whole heaven were covered, and all flesh died that moved upon the earth."

6. That after the space of 150 days, the waters ceased to rise; and finally, at the end of about one year, the Ark having rested on the mountains of Ararat, its living freight went "forth of" it, and found an abode upon the present regions of Armenia.

Such are the principal events recorded in what Dr. Colenso is pleased to call "The Mosaic Story of the Flood"; and in reference to which he says—"I knew for certain, on geological grounds, that a *Universal Deluge*, such as the Bible manifestly speaks of, could not possibly have taken place *in the way described in the Book of Genesis.*"

This statement of the "grounds" on which the writer "knew for certain" that the Deluge was impossible, is simply ludicrous; and it is strange that his eagerness to throw discredit upon the Bible should have been so absorbing as to have rendered him insensible to the imprudence of such a course. There is another event, recorded in a still earlier chapter of the Book of Genesis—the first chapter—by examining which, on similar *grounds*, his extended knowledge of another science may qualify him to say—"I knew for certain, on *physiological* grounds, that the formation of a man, such as the Bible manifestly speaks of, could not possibly have taken place in the way described." The geological grounds in the one case, and the physiological grounds in the other, supply equally secure bases for the *knowledge* founded upon them. How is it that the author did not see that "the way described" (words which he certainly ought to have omitted altogether) expressly excludes the geology as much as it does the physiology?

If the Bible had declared that nature alone had produced the Deluge, Dr. Colenso's geological objections might have been entitled to some attention: but it declares the direct contrary. "Behold *I* even *I* do bring a flood of waters:"—not *Nature*, but *I* THE LORD. "The way described" is God's way; and yet, according to the language of Dr. Colenso, the Deluge could not possibly have taken place in the way described; so that not only is the "Mosaic Story" a

myth, but an Omnipotent Being is also a myth!* The statement is not that the Almighty *did* not “bring a flood of waters,” but that He *could* not do so:—the occurrence was *impossible*. And leaving the question as to whether “the Mosaic Story” is a true story or merely a romance, entirely out of consideration,—or even admitting it to be the latter,—what authority, we would ask, has any man for confidently asserting that the bringing a flood of waters, such as the romance “describes,” was a thing impossible with God? The authority appealed to is of a purely negative character:—it seems that geologists cannot find any positive evidence sufficiently conclusive to them, of such an occurrence:—they cannot discover in the framework of the earth any traces of the Deluge of Noah. But neither, we presume, could a physiologist have discovered, in Adam’s framework, any traces of the original dust out of which he was made. The non-discovery of a thing can never prove even its present non-existence, much less can the non-discovery of traces of a bygone event prove that that event never occurred. Such traces may actually come under our

* One would expect that a writer who expends nearly all his strength in mere verbal criticism would be a little more guarded than Dr. Colenso is in his own phraseology. What does he mean by *the way described*? The only thing *described* in the story is the event itself, with its destructive consequences: there is no description at all of *the way* in which the results were produced. Dr. Colenso describes *a way*, so imagined, of course, as to falsify the narrative. The present writer describes also *a way*, very different from his, which tends to verify the narrative. If no other *ways* can be conceived, then it remains for the reader to determine which of the two was *the way*.

notice, without our being able to recognize them as such:—we may, indeed, refer them to events widely different. It is no uncommon thing, in the history of physical research, for philosophers to attribute effects to wrong causes: and this, be it remembered, they are always *sure* to do whenever the real causes are either wholly or in part supernatural.

Geologists contend that a succession of deluges have overwhelmed the earth; that it has been submerged over and over again; and Dr. Colenso gives unhesitating assent to their doctrines. Continents have sunk down and become sea-beds, and sea-beds have uprisen and become continents: on what valid principle can it be denied that a similar interchange of land and sea-bed took place, as the Bible informs us it did, 4,000 or 5,000 years ago?* And as for geological indications *now* of such an event, they ought never to have been expected. Moreover, if physical science alone were adequate to account for the phenomenon of the Deluge, then although the fact might be admitted, yet the narrative which declares the agent to have been not Nature but God—that the event was

* The Hebrew chronology is acknowledged, by the ablest Biblical scholars, to be unsettled and uncertain: the Deluge may have occurred even more than 5,000 years ago. If the conclusions recently arrived at, respecting the great antiquity of certain hieroglyphic Egyptian monuments, by Hincks, Rawlinson, and others, be correct, the epoch of the Deluge may be as remote as here stated. But, whatever anachronisms really exist in modern versions, they have nothing to do with the subject of the present Essay, which is wholly concerned with the possibility of the event itself, irrespective of the date of its occurrence.—(See the article CHRONOLOGY, in Smith's *Dictionary of the Bible*.)

not a physical necessity, but a supernatural appointment, would be rejected. A phenomenon which is the necessary consequence of physical law, takes place quite independently of immediate supernatural agency. The pretended Divine declaration—"behold *I* even *I* do bring a flood of waters," would be regarded—and justly regarded, as a fable; or at least, as a mere human conjecture,—not as to the fact itself, but as to the agency which produced it:—the writer either ignorantly, or as a pious fraud, attributing to the direct act of God, an event with which *directly* God had nothing to do. But is this the way in which a Divine Record—or a Record only declared to be Divine,—is to be disposed of? If the event is explicable solely by reference to the laws of Nature, supernatural power could have been exercised only to *prevent* it, not to produce it: if it be not explicable on physical principles alone, it could not have occurred!

It is not here denied, however, that physical agencies were the secondary means employed by the Deity to produce the Deluge: we hold that these means *were* employed. But that, independently of the supernatural Power that constrained them to do His bidding, they could not have operated "in the way described:" their operation was not spontaneous, but commanded. The end was not coerced and necessitated by the uncontrolled means; but the means themselves were directed and subordinated to the pre-determined end.

We quote another remarkable statement in reference

to this matter from Dr. Colenso's book:—"I am well aware that some have attempted to show that Noah's Deluge was only a *partial* one. But such attempts have ever seemed to me to be made in the very teeth of Scripture statements, which are as plain and explicit as words can possibly be. Nor is anything really gained by supposing the Deluge to have been partial. For, as waters must find their own level on the earth's surface, without a special miracle, of which the Bible says nothing, a flood, which should begin by covering the top of Ararat (if that were conceivable) or a much lower mountain, must necessarily become universal, and in due time sweep over the hills of Auvergne." *Must* it? Why? "A flood, which should *begin* by covering the top of Ararat," could not be a natural phenomenon,—the supposition implies supernatural agency; so that, according to this dictum, though supernatural power could raise up this mountain of water it could not maintain it there. Nature, dormant during the operation, *must* awake up, upon the completion of the work, drive away the invader of its territory, and forthwith pull down what he had built up!

But we would ask:—Is this the way that the geological deluges alluded to above, commenced and swept along:—did *they* begin by covering high mountains, and thence in due time sweep over lower hills? The author must know that this revival of the long-exploded way of producing a deluge—whether partial or universal, would be repudiated now by everybody, whether

advanced as a dogma of geology, or as a gloss upon Scripture. And he knows full well that a partial deluge might be most satisfactorily accounted for, without the waters beginning to cover mountains at all. He knows that every deluge whether partial or universal, that has ever occurred (if indeed there have been more than one on an extensive scale), has been brought about either by the elevation of the sea-bed, or by the subsidence of the land, or by both of these conjointly. And we cannot but regard his hypothesis of "a flood which should begin by covering the top of Ararat," as a very reprehensible attempt to throw dust—or rather water—in the eyes of the unthinking multitude.*

In fact, in speaking of the devastations of the Flood,

* We quote the following for what it is worth. It is given in the *Times* of March 1, 1864, without any comment:—

"A German skipper, Captain Hilmacher, who had passed many years of his life in those parts, and knew every shoal and sandbank within 100 miles of the Chinese coast, suddenly, about 20 years ago, discovered an island which he was perfectly certain did not exist on that spot before. He took his soundings, determined the latitude and longitude, sailed all round it, and found that it was from 12 to 13 miles in length and breadth. There were several springs of fresh water in it, and it consisted of the richest pasture-ground imaginable. Captain Hilmacher instantly returned to Europe, recruited a number of German emigrants, bought all kinds of seeds, agricultural implements, poultry, and cattle, set out again for this new El Dorado, and in a couple of years there might be seen on the desert island a flourishing village, fields waving with corn, meadows peopled with oxen, goats, and sheep; everything, in short, that might constitute a thriving colony. This happy state of things lasted about five years, when a British merchant vessel unexpectedly made its appearance. The captain and crew expressed their astonishment at finding a European community in such an out-of-the-way place; entered into amicable inter-

the mountains of Ararat and the hills of Auvergne ought never to have been mentioned: these were not flooded at all: they were in reality *unflooded*, like every other portion of the present "new earth." Geology alone would have informed the objector that immediately before the *last* of the alleged numerous deluges and upheavals in the regions referred to, these mountains and hills, as such, were not in existence—they were at the bottom of the sea; and the Bible distinctly declares that "the world *that then was*, being overflowed with water, *perished*. But the heavens and the earth *which now are*, by the same word are kept in store reserved unto fire." (2 Peter, iii, 6, 7.)

The Ark rested upon the earth that *now is*, and not upon that which, as earth, or dry land, *perished*, and became the sea-bed: this would have been impossible.

course with the colonists, and gave them brandy in exchange for their produce. This unfortunate circumstance proved the ruin of the colony: drunkenness grew into a habit, insubordination was the consequence, and one fine day poor Captain Hilmacher, who had hitherto ruled his little kingdom with great wisdom, was obliged to make his escape in a boat to avoid being murdered. He succeeded in reaching a vessel, which took him home again. There he easily obtained the command of a ship, which he took care to provide with plenty of arms, for the purpose of punishing his unruly subjects, and make them repent of their ingratitude. He set sail, but on arriving within the latitude where his island had once existed, he was astonished to find the place empty; not a vestige of land was to be seen: the island had gone as it had come. Had the catastrophe occurred so suddenly as to preclude the possibility of escape? This is what Captain Hilmacher never learnt."—*Galigan's Messenger*.

The above, whether true or not, is a *fac-simile*, on a small scale, of the Noachian Deluge.

Painters and poets, as also some divines, are prone to depict the Deluge as a sudden and tumultuous rush of mighty waters over the entire globe. But the Record gives not the least countenance to the supposition of this universal tumult. We have more reason to conclude that the progress of the Deluge, like that of the building of the Ark, was slow and gradual—occupying nearly the same extent of duration, namely, 120 years:—that the movement commenced about the time the building of the Ark commenced—the far distant lands (if there were any) slowly descending, and the sea-beds slowly rising:—that these movements, unperceived by the remote human inhabitants of the earth, continued till all the regions, unpeopled by man had become gradually submerged; and that *then* the inundation spread to the shores of the region (wherever that was) over which the antediluvian population was distributed. “They were eating and drinking, marrying and giving in marriage, until the day that Noe entered into the Ark, and knew not until *the flood came*, and took them all away.”

We have not the slightest ground for inferring from anything in “the Mosaic Story,” that more than one continuous region of the old earth was inhabited by man during the antediluvian ages; that there was any emigration to distant islands or continents; or that communities were wafted across seas in ships, and formed distinct colonies. No mention is made of any transport by ships, or even of the existence of ships, anterior to the ark; and consequently we have no

right whatever to assume that any such transport—which without ships would have been physically impossible—ever took place before the Flood. There are declarations, plain enough, about tilling the *ground*, but not the remotest intimation of ploughing the *sea*.

Disregarding, then, all such gratuitous assumptions, and rejecting equally the unwarrantable interpolations which the imaginings of objectors have *added* to the text of the story, and adhering strictly to the scriptural version of it, we deduce the following conclusions:—

1. That the destruction of the human race by a flood of waters was threatened BY GOD, and communicated to Noah, 120 years before that destruction actually took place; and that, by the same Divine command, the building of the Ark proceeded *pari passu* with the slow advance of the impending calamity towards the shores of the region occupied by Noah and the rest of the human family.

2. That it commenced contemporaneously with the commencement of the Ark, by the slow but continuous subsidence of whatever remote lands were then in existence, all of which perished by the overflowing of the waters: this original land, when the subsidence had ceased, becoming the bed of the superincumbent sea. [The gradual rising of the new earth would expedite these partial deluges; and thus is removed the difficulty some have felt in finding water enough for the Flood. These subsidences and upheavals are no other than geologists generally feel themselves compelled to assume, on what they regard as scientific grounds to

account for certain geological phenomena. What in geology is described as upheavals of sea-beds, being in Scripture characterised as the breaking up of the fountains of the great deep.]

3. That these successive subsidences and upheavals gradually approached nearer and nearer to the region inhabited by man; till, at length, towards the close of the 120 years, and seven days after Noah and those he was commanded to take with him, had entered the Ark, the waters of the Flood were upon the earth—the only dry land with which, it is very likely, the inhabitants of it were acquainted. “The same day were all the fountains of the great deep broken up.” *Till* that day, *all* were not broken up:—the human world, “the world of the ungodly,” reserved to the last, had yet to be destroyed (2 Peter, ii. 5.) [The words of St. Peter may, however, imply that the same day the last of the several upheavals commenced.]

4. That the Deluge, having for its special object the punishment and destruction of a wicked and rebellious people, the wrath of an offended Deity was now more signally manifested: for no sooner had Noah and his family, with the animals to be preserved been safely housed, than the final breaking up and subsidence took place, accompanied by unremitting torrents of rain for “forty days and forty nights;” the first upheaval which appeared above the surface of the waters being probably the land of Armenia; and on the rising mountains of Ararat, in this new land, “in the seventh month, on the seventeenth day of the month,” the Ark rested.

And ultimately (after about a year's abode in it) "the face of the ground" was sufficiently dried for Noah and the other occupants to leave the Ark and betake themselves to the new earth thus provided.

There is no reason whatever to suppose that the mountains of Ararat, at their first contact with the bottom of the Ark, had anything like the same elevation as at present. This contact doubtless took place during the slow progress of upheaval, the gradual exposure of the new land having been more the consequence of the continuous emergence of it from the waters than of the retiring or sinking of the waters themselves.

The upper regions of Ararat, now so elevated, and so covered, to an extent of 3,000 feet from the summit with perpetual snow, may then not have attained to anything like this altitude, and may have presented a most genial climate; a climate fully equal in temperature and salubrity to that which Noah had left. It is preposterous to suppose that he would have been landed amidst a dreary waste of ice; where animal life could have found no means of support; and where, without a special miracle, he and all that were with him must have been speedily frozen to death upon quitting the Ark. Yet this is the supposition that Dr. Colenso affirms the story to justify. "For," he says, "the story evidently supposes that the Ark rested on the highest mountain-summit for 73 or 74 days; since it says that it 'rested' on the *seventeenth* day of the *seventh* month and the mountain-tops were seen on

‘the first day of the *tenth* month.’ Now the highest summit of Ararat is 17,000 feet high, more than 1,000 feet higher than Mont Blanc, and 3,000 feet above the region of perpetual snow—*above* which, according to the story, they must have lived from the ‘*seventeenth* day of the seventh month’ to the *twenty-seventh* day of the *second* month—for more than seven months But, when the waters had retired from the earth, *i. e.*, for at least *two* months, according to the story, the air would scarcely have supported respiration, and living creatures in the Ark must have been frozen to death.” All this may be quite consistent with the story of Colenso’s Flood, but it has nothing to do with that of Noah’s Flood. The mountains of Ararat were not among “the high hills under the whole heaven” that were covered by *that* flood: they were among those that were *uncovered*; so that, from the present altitude of Ararat, no conclusion whatever can be deduced as to the elevation of the waters of the Deluge. This elevation may have been immensely short of what has sometimes been imagined; for the high hills that were covered, were covered in consequence of their own subsidence below the waters, not of the waters rising above them.

When Dr. Colenso’s attention was directed to this story of the Flood (and it would seem for the first time), by his Zulu pupil, and when the inquiring native, seeking enlightenment from his intellectual superior—from him who had undertaken the office of his spiritual instructor, looked up and asked, “Do you really believe

that all this happened—that all the beasts, and birds, and creeping things, upon the earth, large and small, from hot countries and cold, came thus in pairs, and entered into the Ark with Noah? And did Noah gather food for them *all*, for the beasts and birds of prey, as well as the rest?’—the bishop was dumb-founded by the very natural, and, in the untaught Zulu, the very commendable and creditable inquiry. And instead of correcting his mistaken notions, and giving him a rational description of the Flood—such as even his geology ought to have qualified him to do—he says his “heart answered—shall a man speak lies [as of course Moses did] in the name of the Lord?”!

It is clear that the inquiring Zulu had exercised more reflection on the matter than the bishop had, notwithstanding all the “hard thinking” for which the latter takes credit. The mind of the poor native was evidently dwelling upon the lions, and bears, and tigers, and crocodiles, and vultures of this present earth; which is *not* the antediluvian earth—the earth that the Bible declares was “destroyed” by the Flood; as his bishop ought to have told him. He ought to have told him that there is no proof—no intimation whatever from Scripture, that these animals were even in existence in any region of what was then earth, much less in that particular region where the human race had congregated. And that even admitting they *may* have inhabited distant lands, these distant lands, and they with them, had been *submerged* before the Flood reached Noah’s locality. Noah could not have taken

into the Ark animals that had perished *before* his pairs had been selected: he was commanded to take only "of every *living* thing, two of every sort;" and this command, be it remembered, was executed only seven days before the Ark itself embarked.

And hence the fruitlessness of all speculation and calculation respecting the capacity of the Ark to *hold* two and sevens of every sort. The question first to be settled is:—How many *sorts* were there? And this nobody can answer: but of one thing we may be sure:—that as the Lord God dictated the dimensions, there was room "enough and to spare."

And so of Adam giving names "to all cattle, and to the fowl of the air, and every beast of the field:" it has been contended that this tedious operation would have consumed an enormous amount of time; and hence the great probability of the *Day* being a geological period.* But how can any notion be formed of the time employed in naming, without any data as to the number of things named? The mere fact of this naming having been so easily accomplished, coupled with the subsequent fact that pairs and sevens of all living animals (except fishes) were accommodated in the Ark, justifies the conclusion that but comparatively few species of land and aerial creatures then existed. Nothing is said to have brought forth *abundantly* but the waters. Thorns and thistles did not appear upon the earth before the Fall; and there is no reason to suppose that birds and beasts of prey, venomous reptiles,

* See the note at page 51.

or noxious insects, appeared till after the Deluge. The raven *may* have been an exception, and the only exception, to the general exclusion of even carnivorous animals. Some such a voracious feeder was perhaps indispensable to the antediluvians, to remove the remains of animals devoted to sacrifice, and to perform the office of scavenger generally; for the raven is not exclusively carnivorous, it is omnivorous. The Bible indeed distinctly enough declares that no provision was made on the earth for any exclusively carnivorous animals at all; and therefore that such could not have been among the antediluvian creations:—"To every beast of the earth, and to every fowl of the air, and to every creeping thing that creepeth upon the earth wherein there is life, I have given every *green herb* for meat." So that, notwithstanding the foregoing conjecture, as to the office of the raven, its *natural* food was not flesh; at least, flesh was not indispensable to its support. The text just quoted distinctly declares that *every* green herb with which the earth was clothed, was suitable for food for *every* creature. Nothing noxious or hurtful to man or beast was to be found in any part of the supply which God pronounced to be "very good." There could have been no *medicinal* plants even, much less poisonous weeds and shrubs: *these* were the significant aftergrowths of a banned and blighted soil; and not the blessed productions, in reference to which it is recorded that—"God saw *everything* that he had made, and behold it was very good."

In the second part of his work, Dr. Colenso asks—

what however he seems to regard as a most unnecessary question—"Do even the bishops and doctors of our Church believe the Scripture account of the Deluge? I assert, without fear of contradiction, that there are multitudes of the more intelligent clergy, who do *not* believe in the reality of the Noachian Deluge as described in the Book of Genesis"! He says that if anyone, "without any appeal to science at all, only allows himself to *think* upon the subject, and to realize to his own mind the necessary conditions of the supposed event, he will need only a common practical judgment to convince him that the story told in the Book of Genesis is utterly incredible, which involves the necessity of Noah taking in a supply of animals, or of animal food, for the special use of the carnivorous beasts and birds, and of Noah and his family taking round two or three times a day food and water to such a multitude of animals, supplying them daily with fresh litter (how stored and kept?) and removing the old, with other considerations of the same kind."

Now we would ask:—What antediluvian work on Natural History was it that furnished the writer with his knowledge of the antediluvian Fauna? How came he to *know* that there was "such a multitude of animals" in existence—that there were *any* carnivorous beasts and birds, save the raven, at most? No post-diluvian author could have supplied such information: the *facts* can be gathered from no other book but the Bible; and anyone of "a common practical judgment" must see that if pairs of all the then existing tribes were

taken into the Ark, these tribes could not have been so numerous as to render the operation impracticable. Dr. Colenso, however, first *assumes* that there was more than an ark-full of pairs, and then concludes that "the story is utterly incredible," because the Ark could not hold them! Why, for aught he can shew to the contrary, the whole of the beasts and birds then in existence might not have been sufficient to have supplied pairs and sevens to stock even a very moderate English farm:—the individuals may have been very numerous, and the differing species very few. Unless he can prove the case to have been otherwise, his remarks are as futile as his data are "unhistorical."

And the same may be said of his other assumption of "hot countries and cold." How does he know that there *were* actually hot countries and cold in existence to supply his imaginary birds and beasts? He writes as if he were in possession of a map of the antediluvian world; whereas all is pure fancy and unfounded speculation. Why should it not be literally true that "the waters were collected into *one* place;" and that the first dry land was but one continuous and genial region—neither hot nor cold? In the present Essay, we have conceded to objectors their assumed position that there were diversities of country and climate; but this concession is made simply because the argument is equally conclusive, whether it be yielded or withheld. If the dry land consisted of but one continuous region, then, however many upheavals there may have been, forming the new earth, there was but one subsidence,

destroying the old one—"the world of the ungodly." No human being can possibly *know* anything about the configuration of the earth's surface at the time when Adam and Eve trod the Garden of Eden. How can any man do more than merely *conjecture* as to the shape and extent of what has utterly perished, and of which no recorded description exists? But it is plain that his Zulu friend has inoculated the Doctor with his own crude notions; though it is certainly extraordinary—when so taken aback by this inquisitive gentleman's interrogatories, that even his "own knowledge of geology, which had been much increased since he left England," should have so signally deserted him, instead of coming to his rescue; for the most superficial acquaintance only with that subject would have suggested to him hints in abundance about upheavals and subsidences—successive destructions of animal life, and successive *creations*. Finding himself bewildered by such unexpected queries, and feeling his own imperfect acquaintance with "the story," why did not he go at once to his book-shelves and consult Josephus; or even quietly retire, and look more carefully into his own BIBLE? Why did he not show the mistaken Zulu, from that Bible, that the earth *he* was thinking of is *not* the earth that the Flood destroyed? *He* was evidently not taking into consideration the destruction of the antediluvian *earth* at all; only of the creatures upon it, which he imagined to have been as numerous and as varied as its present inhabitants; and that the Deluge simply swept them from its surface. He, as

well as his teacher, had overlooked the thirteenth verse of the sixth chapter of Genesis, where, "according to the story," it is declared that "God said unto Noah, The end of all flesh is come before me; for the earth is filled with violence through them; and behold I will destroy them *with the earth*." And if his disciple—pointing to the marginal reading—had insisted that this must mean *from the earth*, he should have at once undeceived him, by turning to the eleventh verse of the ninth chapter, and showing him these words: "And I will establish my covenant with you; neither shall all flesh be cut off any more by the waters of a flood, *neither* shall there any more be a flood to *destroy the earth*." And if these references had proved insufficient, the scrupulous and pertinacious Zulu might have had his attention directed to the inspired language of St. Peter. "By the word of God, the heavens were of old, and the earth standing out of the water and in the water, whereby *the world that then was*, being overflowed with water, *perished*. But the heavens and the earth, *which are now*, by the same word are kept in store reserved unto fire against the day of judgment and perdition of ungodly men." (2 Peter, chap. iii. v. 5—7.) The plain meaning of which is—in so far as the *earth* is concerned—that the dry land, which was made to *appear* on the third of the Six Days, was made to *disappear* at the Deluge; and that the dry land, that is now, was then made to appear instead. As to "the *heaven* which is now," we shall offer some observations hereafter.

Alluding to the "other difficulties which the story contains," Dr. Colenso says—"I refer especially to the circumstance, well known to all geologists, (see Lyell's *Elementary Geology*, p. 197, 198) that volcanic hills exist of immense extent in Auvergne and Languedoc, which must have been formed ages before the Noachian Deluge, and which are covered with light and loose substances, pumice-stone, &c., that must have been swept away by a flood, but do not exhibit the slightest sign of having ever been so disturbed."

Now where is to be found the indisputable *proof* that these hills "*must* have been formed ages before the Noachian Deluge?" And as to their not exhibiting the slightest sign of a flood having swept over them, we ask—How should they? The flood never swept over them at all. And the objector actually, though unwittingly, proves, as far as the facts adverted to *can* prove, that the loose covering of the hills in question cannot be of such remote formation as he previously assumes it to be. He does not perceive that the undisturbed condition of the "light and loose substances" with which the hills of Auvergne are covered, exposed as they have been ever since their formation, to the denuding effects of wind, and rain, and frost, is an argument which tells directly *against* the hypothesis of their vast age, instead of for it. The age claimed for these hills is 18,000 years at least. Kalisch, whom Dr. Colenso so often refers to as an authority for his statements, says, in reference to the districts alluded to, "That extraordinary region contains rocks, con-

sisting of laminated formations of siliceous deposits; one of the rocks is 60 feet in thickness; and a moderate calculation shows, that at least 18,000 years were required to produce that single pile. All these formations, therefore, are far more remote than the date of the Noachian flood; they show not the slightest trace of having been affected or disturbed by any general deluge; their progress has been slow, but uninterrupted; even the pumice-stone, and other loose and light substances, with which many of those hills and the cones of the volcanic eraters are covered, and which would have been washed away by the action of a flood, have remained entirely untouched;" and that too, after so many thousands of years' exposure to all the vicissitudes of weather, hail, and storm, and tempest! Now without dwelling upon the ineonsisteney of the permanent coherence and *fixedness* of these *loose and light* substances, we would ask—what has the age of the "laminated formations of siliceous deposits," of which the rocks consist, to do with the time when these laminated rocks *last* appeared above water?

Hugh Miller, who in his *Testimony of the Rocks* adopts the hypothesis of a partial deluge, also adverts to these hills of Auvergne; and Dr. Colenso quotes the remarks as if the author supported *him*:—"The cones of volcanic craters are formed of loose incoherent scoriæ and ashes; and when exposed as in the case of submarine volcanoes, such as Graham's Island and the Island of Sabrina, to the denuding force of waves and currents, they have in a few weeks, or at most a few

months, been washed completely away. And yet, in various parts of the world, such as Auvergne in central France, and along the flanks of *Ætna*, there are cones of long extinct or long slumbering volcanoes, which, though of at least triple the antiquity of the Noachian Deluge, and though composed of the ordinary incoherent materials, exhibit no marks of denudation. According to the calculations of Sir Charles Lyell, no devastating flood could have passed over the forest zone of *Ætna* during the last twelve thousand years,—for such is the antiquity which he assigns to its older lateral cones, that retain in integrity their original shape; and the volcanic cones of Auvergne, which enclose in their ashes the remains of extinct animals, and present an outline as perfect as those of *Ætna*, are deemed older still. Graham Island arose out of the sea early in July, 1831; in the beginning of the following August it had attained to a circumference of three miles, and to a height of two hundred feet; and yet in less than three months from that time the waves had washed its immense mass down to the sea-level; and in a few weeks more it existed but as a dangerous shoal. And such, inevitably, would have been the fate of the equally incoherent cone-like craters of *Ætna* and Auvergne, during the seven and a half months that intervened between the breaking up of the fountains of the great deep and the re-appearance of the mountain-tops, had they been included within the area of the Deluge.”

Here the stress of the argument (against a *universal*

deluge) is laid—not as with Kaliseh—upon the length of time required for the production of the laminated formations—but upon the reasonable affirmation that the incoherent matter composing the cones of the mountains in question would have been carried away by the ocean-tumult before the re-appearance of their tops above the water. But there need have been no tumult at all; the ascent of the new land may have been, and we believe was, slow and tranquil. We have no right to suppose that the surface of the sea, at the time of this re-appearance, was stormy, any more than that it was perfectly calm; and the slow rising of a large extent of land would have the effect of quieting whatever central disturbance there may have been above. And as to Graham's Island, it *may* not have disappeared—we submit it *did* not disappear, by being rapidly washed away by the denuding force of waves and currents. We here quote the latest information respecting this erratic island:—

“Since the 28th of June, 1831, an island, successively graced with the names of Ferdinand, Graham, Hotham, Nerita, and Julia, has several times appeared and disappeared off Palermo, and is now on the point of getting above water again . . . nor is this the only instance of the kind on record. In the neighbourhood of the Philippine Islands, and on other points of the Chinese waters, small islands occasionally rise and make their exit again, without attracting much notice.”
—The *Times*, March 1, 1864. It is as likely that these islands sink bodily, as that they rise bodily.

It may readily be conceded that no lithological vestiges or signs, conclusive of the Noachian Deluge, are to be found in any region of the earth. If "the Mosaic story" be a true story, such vestiges or signs of what has disappeared cannot exist on this present earth. The reason why they do not exist is similar to the reason why no signs of the great earthquake at Lisbon in the year 1755, exist in the structures of the present city—the new Lisbon: the signs disappeared with that on which they were impressed.

But although there can be no *lithological* evidence of the Noachian Deluge, yet the animal remains sometimes found in situations which geologists are so puzzled to account for, might, if their real history could be traced, abundantly confirm the truth of the Record. It was the *inhabited* region of the antediluvian world that was exclusively the scene of sudden tumult—of swift and terrific destruction. The rain, pouring down for forty days and forty nights with unexampled fury, would alone beat away the upper soil, invade the caves and burial places, expose and liberate, and cast adrift human corpses, and human fabrications of even then ancient date. Bodies, too, of the drowned population would float away in all directions; and fragments of these, after mutilation by voracious inhabitants of the deep, would be very likely to find a lodgment in the fissures and dislocations of the "broken up" land, in its gradual ascent to the surface. These lithological fractures in the upheaving masses, being produced under water, and the parts

again uniting under water, the consolidated mass would rise to the light of day a mighty tomb; in which a few stray remnants of humanity would have invaded the long closed-up sepulchres of animals that had once roamed the forests of the pre-Adamite earth; and thus the bones of creatures that had existed at widely distant epochs, would be found intermingled in one common depository; in situations where the animals themselves could never have lived together, nor have died together; and whose remains could have come into juxtaposition only in consequence of some widely spread catastrophe. And it is still more likely that, in the extensive "breaking up" of seabeds to form the present "new earth," huge fragments of the rising masses, with all their fossil contents, would have detached themselves and drifted away; some to sink again to the bottom, and others, of lighter material—lighter in the aggregate, meeting with fresh uprising land, would become united to it, and borne up with it. In fact, from an upheaving continent a large amount of loosened matter may be expected to fall off and drift away in all directions.

We have here been referring to what may be regarded as mere casualties, or accidental concomitants of the several upheavals. But why should these upheavals themselves be considered as uniformly proceeding in a *vertical* direction? All we know is that there were very general displacements and rearrangements of matter; and, bearing in mind the directing agency, why may not some of these have implied

lateral movements of the rising masses, causing the remains embedded in them to be transported to latitudes where we might little expect to find them?

And in fact, there is a *natural* tendency to lateral motion in every uprising portion of land. A mass of matter whose upper surface forms an ocean bed, rotates from west to east with a slower velocity than the superincumbent waters vertically over it, and is thus to some extent preceded by those waters more and more as the mass ascends (unless it be sufficiently rigid throughout to bear the strain); the tendency to lateral displacement increasing as the original depth is greater. And this physical truth, we believe hitherto overlooked, is worthy of consideration by geologists in connection with the doctrine of the elevation of granite, in a state of fluidity or semi-fluidity, from the supposed molten nucleus of the earth, to form the unstratified rocks. Such molten matter would continually tend more and more to spread itself laterally as it rises; and on emerging above the water, there being then less resistance to this tendency, we might expect the incipient granite to overflow its stratified envelope, and spread over it in a westerly direction.

No doubt, formerly, remains of the Noachian Deluge were regarded as being abundant all over the present earth. But this supposition arose out of the now exploded doctrine which taught that a deluge operated, of necessity, by means of oceans of water sweeping over the mountains (they themselves still remaining *in situ*), and then, after a universal destruction of life,

retiring to their former beds, leaving ample vestiges of that destruction behind. But any modern writer, professing to be acquainted with, and giving his assent to, the principles of modern geology, who talks about existing mountain summits having been "swept by a Flood," cannot but do so for the purpose of misleading those whom he addresses. He *must* know that he is entirely misrepresenting the *modus operandi* of the catastrophe, opposing equally the conclusions of science, and the declarations of Scripture.

All modern geologists agree that every part of the present dry land uprose from the waters, in fact, their doctrine is, that it has risen and sunk several times. They call certain of these movements geological "convulsions;" and although it is considered that they were, in general, of but comparatively brief duration, yet that many ages of tranquillity intervened between every consecutive two. The upheavals which took place during the Deluge of Noah were gradual, extending over a period of 120 years. Indeed, these may not all have ceased—may not any of them have ceased, till long after the landing of the Ark. Let us suppose that what are now the summits of the mountains of Ararat, of the hills of Auvergne, or of any other existing mountains, before their final upheaval commenced, were so much as 3,000 feet below the surface of the superincumbent sea; and that their gradual ascent, till they appeared above that surface, occupied only 100 out of the 120 years; the rate of ascent vertically would have been less than an inch per day of

twenty-four hours—a degree of progress too slow to have sensibly disturbed those “light and loose substances” upon which more than 4,000 years—nay, according to the dictum of certain geologists, more than 18,000 years—of exposure to atmospheric influences is declared to have had little or no effect.*

We may notice, in conclusion, the objections advanced by Hugh Miller, in his *Testimony of the Rocks*, to the universality of Noah’s Deluge.

As already mentioned, Mr. Miller considers the Flood to have been only partial, and to have been confined within a radius of a few hundred miles around the dwelling-place of Noah; and, after descanting upon the vast extent of animal life of the present and pre-Adamite creation, asks, “How are such facts reconcilable with an universal deluge?” And he adds, “Had it been universal, it would either have broken up all the diverse centres, and substituted one great general centre instead—that in which the Ark rested; or else, at an enormous expense of miracle, all the animals preserved by *natural* means by Noah would have had to be returned by *supernatural* means to the regions whence, by means equally *supernatural*, they had been brought. The sloths and armadilloes—little fitted by nature for long journeys—would have required to be ferried across the Atlantic to regions in which,

* The external covering, the last coating of pumice-stone, &c., may have been, and we have no doubt was, never under water at all: this and similar incoherent matter was most likely ejected centuries after the Deluge. Let the contrary be *proved* if it can, not *assumed*.

the remains of the megatherium and glyptodon lie entombed ; the kangaroo and wombat to the insulated continent that contains the bones of extinct macropus and phascalomys ; and the New Zealand birds, including its heavy-flying quails, and its wingless woodhen, to those remote islands of the Pacific in which the skeletons of the *Palapteryx ingens* and *Dinornis giganteus* lie entombed." — *Testimony of the Rocks*, p. 304.

But in all this it is taken for granted that the animals here alluded to *existed* in Noah's time, though the beasts and birds and creeping things, supplied during the six days, need not have been anything like so abundant as the creatures which existed either before Adam or after the Flood.

If any one, after reading what has now been submitted to his consideration, still thinks that the general Deluge, instead of taking place gradually and in detail, was as sudden everywhere as in the land of the ungodly, we would invite his careful attention to the language of the seventh and seventeenth verses of the sixth chapter of Genesis. In the first of these it is said, "I WILL destroy man whom I have created from the face of the earth ; both man, and beast, and creeping thing, and the fowls of the air ;" clearly implying a threat of *future* vengeance. But no sooner are the necessary directions given to Noah about the construction of the Ark, than God says (v. 17), "And *behold* I, even I, do bring a flood of waters upon the

earth ;” evidently indicating a *present act*, and that at the commencement of the 120 years.

“ The Mosaic Story of the Flood ” is thus seen to be entirely free from those impossibilities and inconsistencies which Bishop Colenso would fasten upon it. And although physical nature alone could not have produced the phenomenon any more than physical nature alone can manufacture gunpowder, yet no violation of physical laws took place. The same agencies of nature—which, within historic times, have caused old lands to sink down and new lands to rise up—directed by the Almighty WILL, in a way adequate as means to the accomplishment of His purposes, were all that, in His hands, were necessary to bring about the extensive results we have been contemplating. “ Impossibilities and inconsistencies ” there are none. There is no impossibility in the submerging of the old earth and the uprising of the new ; there is no inconsistency in sheltering specimens from every species of the then animal kingdom in the Ark, and supplying them for a year with food and litter. There are no grounds whatever for affirming the narrative to be “ unhistorical ”—a mere Hebrew fable or romance. Dr. Colenso’s immediate predecessors in the work of Bible-defamation signally failed in their attempts to prove Moses “ a Hebrew Descartes, or an early Copernicus ;” and he has failed—even more signally failed—in his endeavours to prove him a Hebrew Dean Swift, or an early Defoe.

NOTE.

IT was observed at page 34, that the naming by Adam, in one day, of the beasts of the field, and the fowl of the air, has been adduced in proof of the lengthened period of time implied in the word "Day;" as twenty-four hours would have been very insufficient for the operation. Dr. McCausland expresses himself in reference to this matter as follows:—

"It would have been a physical impossibility, not to be accounted for by a suggested miracle, that a being of human mould could have surveyed with his eyes, comprehended with his mind, and named with mortal tongue, all the beasts of the field, and birds of the air, or even a limited portion of them, within the narrow space of twenty-four hours."*

This certainly sounds strange:—A human being not able to name "even a limited portion" of beasts and birds in twenty-four hours! Adam might have had ample time to name all then in existance in a fourth part or less of twenty-four hours. But even if Adam's "Day" had comprehended all the multitude of natural days which this writer considers it to have done, the difficulty of the task, taking Dr. McCausland's estimate of it, would have been but little abated. Does the writer really suppose that the bear from antediluvian polar regions, the lion and baboon from an antediluvian central Africa, the elephant from an imagined India, and the feathered tribes from some now extinct America and Australia, were all transported to Eden, mar-

* *Sermons in Stones*, p. 124.

shalled before Adam, and then transferred back to their respective habitats? How do we *know* that *any* animals were then created beyond those which were inhabitants of the region in which Adam was placed? After the Deluge, there was a *new creation*, or at least *new formations*. This is distinctly enough recorded. All that previously had the breath of life (save those preserved in the Ark) were destroyed: the preserved animals were thus preserved to propagate their own kinds, but not to introduce different species: these were to be supplied by a fresh exercise of creative or formative power—"He renewed the face of the earth." The "replenished" earth must have been much more extensively populated with beasts of the field and birds of the air than in the first creation. We venture to say *must* have been, from this recorded fact of the naming them all, taken in conjunction with the other recorded fact, that selections from, and specimens of, all the living creatures, then in existence, were received into the Ark, and there supplied with stored food for one year.

SECTION III.

ON THE POST-DILUVIAN CREATIONS.*

IN the foregoing observations on the Deluge, we have felt justified in assuming that the creation of beasts of the field and birds of the air, during the six days, was a limited creation, sufficing to stock only those regions in which the human family had dispersed itself up to the time of Noah.

We consider that the circumstances detailed in the narrative, not only justify, but compel this conclusion, more especially the two recorded facts before noticed, namely:—1. That the animals were not more numerous than Adam could survey and name in a brief space of time; and 2. That selections from all the then living creatures—one pair of each sort, having certain common characteristics, and seven of the other sorts—were all accommodated, together with a year's supply of suitable food, within the limits of the Ark. And, moreover, that venomous creatures, and beasts of prey, were not *then* in existence.

It follows, therefore, that the new earth which succeeded that which was destroyed by the Deluge, must have been supplied with new creations of animals.

* It is to be noticed that throughout the present section, we mean by the term "creation," only the production of new organized beings, and not the creation of additional matter out of nothing.

That the *vegetable* supply was not derived from the antediluvian earth, is indisputable : Noah did not take with him selections of all seeds and plants, as well as of all animals, and even if he had done so, how came the olive tree, from which the dove "*plucked off a leaf*"? Olive trees do not grow at the bottom of the sea ; and therefore could not have been borne up with the new land. And that the leaf was from a *living* tree, rooted in the exposed soil, and not from a floating dead branch, Noah well knew from the evidences of living freshness which it presented. "Noah *knew* that the waters were abated from off the earth." And then again, let the question be considered—when Noah and his family, and all that were with him, went forth of the Ark, at the bidding of God,—where could they have found food, if God had not provided an adequate vegetable supply on the new earth, *before* thus bidding his creatures to "Go forth, that they may breed abundantly in the earth, and be fruitful and multiply"?

There is nothing in this doctrine of successive creations that contradicts any portion of Revelation ; while it is directly implied in the language of St. Peter already quoted, and elsewhere. The declaration that on the seventh day God rested from all the works that he had made, does not justify the conclusion that the creative Power, or rather that the power of calling new organisms into being, was never afterwards to be exercised. The plagues of Egypt alone suffice to show that such a conclusion cannot be maintained ; for whatever be supposed in reference to the frogs and

the locusts, it cannot be disputed that the dust being converted into lice was as much a creation as the formation of Adam was.*

No doubt the eleventh verse of the twentieth chapter of Exodus will here occur to the reader:—
 “For in six days the Lord made heaven and earth, the sea, and all that in them *is*.” But this last word, “*is*,” is absent from the original Hebrew; and in the English Bible is printed in italics to indicate the fact. A translator has just as much right to supply the word *was* as the word *is*; the former having equal claim with the latter to be introduced for the purpose merely of giving that completion to the sentence which the English form requires: and it has a greater claim on the score of textual accuracy: for at the time when this declaration was made, the then existing productions of the earth were avowedly not *all* introduced during the “six days:” thorns and thistles, for instance, were not made to appear till afterwards; and the Manna supplied to the Israelites in the wilderness was unquestionably a subsequent supernatural production, though but a temporary one. It is designated “the bread of heaven:”—“Manna which thou knewest not, neither did thy fathers know.” (Deut. viii. 3.) And in connection with the matter under consideration, the following passage from the Prophet Nehe-

* Even the magicians were forced to acknowledge the unmistakeable power of the Creator here; and were constrained to exclaim—“This is the finger of God.”—Ex. viii., 19. (See the remarks on God’s resting on the seventh day, at the end of the present section).

miah (ix. 6) is also worthy of notice. "Thou hast made heaven, the heaven of heavens, with all their host, the earth, and all things that are therein, the seas, and all that is therein, *and thou preservest them all.*" But as respects the *antediluvian* creation, "the earth, and all things that [then were] therein," were not *preserved*, but *destroyed*. The Prophet must therefore here refer exclusively to the "heavens and the earth which are now," and which are declared elsewhere to be *preserved*, or "kept in store."

The passage of St. Peter, whence these latter words are taken, and which has been adverted to more than once in the course of the present essay, as distinctly records also a change in the condition of the *heavens*, as it does a renewal of the earth, after the Deluge. The entire passage runs thus:—"Knowing this first, that there shall come in the last days scoffers, walking after their own lusts, and saying, Where is the promise of His coming? for since the fathers fell asleep, all things continue as from the beginning of the creation. For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water: Whereby the world that then was, being overflowed with water perished: but the heavens and the earth which are now," &c.

The heavens which were of old are not here said to have *perished* with the earth, though "the heavens which are now," are clearly implied to be different from those of old, or previous to the Deluge. We

infer, therefore, that after this event, the ethereal fluid underwent a change.* We know that after the Flood, human life became rapidly shortened in duration; and as the surrounding ether, which permeates all things, is breathed with the atmospheric air, it is probable that *it* may be the main principle for sustaining vitality; and that accordingly a change in the condition of that subtile fluid, inhaled at every inspiration, is all that would be necessary for the purpose of shortening the existence of all breathing creatures.

The fact that the human race after the Deluge all descended from Noah and his family, precludes the notion that the human organization was deteriorated through any causes that physiology can assign. Noah himself was remarkably vigorous: he was six hundred years old when he entered the Ark, and his whole life extended to nine hundred and thirty years. But his son, Shem, who was nearly one hundred years old at the time of the Flood, reached only to the age of six hundred years; and at the time of Peleg, human life had diminished to half this extent; and it continued to diminish till, by the time the children of Israel came out of Egypt, it had dwindled down to very nearly its present contracted limits.

But in thus ascribing, as a physical cause for this decadence of human life, after the Flood, a modification of the ethereal fluid, which we regard as the material of the terrestrial and sidereal heavens, we do not con-

* On the meaning of the term "heavens," see *Science Elucidative of Scripture*.

ceive that the change in its condition was a universal change, extending to the remote regions of space. In this, as in every other of the arrangements and appointments of Omnipotence, nothing superfluous can ever be supposed to have been done. The change may have been limited, and—on the supposition that it actually took place—no doubt was limited, within the range of our atmosphere.

It may be said, and truly said, that all this is but conjecture. But we submit, taking into due consideration the words of St. Peter, that it is a reasonable conjecture. It should never be forgotten, that he who ventures to assign the specific physical agency which the Deity invokes to accomplish any of His declared purposes, has seldom anything beyond reasonable conjecture to determine his selection. In Revelation, especially in the narrative and historical parts of it, facts and events are recorded simply in their order of succession, *usually* without any circumstantial details; and being authoritative statements, *always* without physical explanations. There are two ways in which the absent details may be supplied: the gap may be filled in by conjectural positions and assumptions purposely contrived—not to unite the parts into a consistent and harmonious whole, but to force them into discordant conflict with each other. Or, on the other hand, an unprejudiced consideration of the story may suggest to the mind such attendant, though unrecorded circumstances, as may weld together the disjointed facts into a perfectly consistent and continuous narra-

tive. And if such suggestions violate no principle of physical science, and are in themselves reasonable and probable, they are surely at least as valid and admissible, for the purpose of confirming the veracity of the story, as the arbitrary inventions of prejudiced minds are for the purpose of destroying its truthfulness.

And in a controversy of this kind, it is amply sufficient that the explanations offered, by way of answer to the objections advanced, have these characteristics of reasonableness and probability; and that it be shewn that the counter-suppositions and assumptions are deficient in the like indispensable features.

It is not imperatively necessary that the defender of the narrative should be able to supply the very details which the narrator himself might have supplied, had he so chosen. It is not incumbent on him to discover and point out the actual concomitant circumstances. His business is—not to amplify the account, by introducing into it all the subordinate events that really occurred, with the order and manner of their occurrence:—it is simply to shew that the objections made to the consistency of the declared events, and to the physical possibility of their being *real* events, are unsupported by valid reasoning; and that on the contrary, the narrative may be shewn to be perfectly consistent, and the facts perfectly admissible, as such, without any departure either from the principles of physical science, or the principles of common sense. In the carrying out of this purpose, it is really of not the slightest moment whether the explanations and details entered into are the true ones or not. They are

not given to perfect or complete the Record—to supply oversights or omissions; but to disprove the assertion that they *cannot* be given without violating physical truth:—that satisfactory explanations are, in fact, *impossible*. If the truth of this assertion be disproved—and to disprove it is the sole object of the foregoing discussion, it becomes nugatory—its force vanishes. Whether or not, in the course of that discussion, the causes or operations assigned are really those which produced the declared effects, or whether or not the explanations of matters which are left without any explanation at all, be the *true* explanations, are considerations quite beside the question. The real question to be settled is this:—Can the recorded events be accounted for, *in any way whatever*, that shall be consistent with the salient points of the story, and at the same time not inconsistent with the principles of physical science? If they can—and we submit that it has been here shewn how they can—then it follows that, on whatever other grounds the “Mosaic Story” may be impugned, it cannot be fairly impugned on *this* ground—the ground, namely, of its inherent inconsistency and impossibility. And every candid mind must admit that it is no argument against this conclusion, that imagination may conjure up accessory circumstances and events, which when dovetailed into the narrative may destroy its credibility; for the veracity of any story whatever may be damaged, to any extent, by stratagems of this kind. Any one who undertakes to prove that the events recorded in any narrative, deficient in circumstantial details, are of impossible occurrence, un-

dertakes a task of much greater difficulty than such writers as Dr. Colenso appear to be aware of; and those who sit down to examine the reasonings of these persons should always be on their guard against being entrapped by plausible sophistry under the guise of sound logic. The two principles which we are now about to enunciate should always be borne in mind, by every one earnest in his search for the truth, when he is comparing arguments, for and against, in controversies of this kind. They are these:—

1. He who undertakes to prove the *impossibility* of anything, is absolutely forbidden, on the principles of sound logic, from introducing into his argument any conjecture or supposition whatever in support of that argument.

2. But he who undertakes to prove the *possibility* of the same thing, has full liberty to offer any conjecture he pleases; provided only that the conjecture itself involves no impossibility.

That these principles are sound, will, we think, appear after a little reflection. For, in reference to the first, it is plain that such terms as “perhaps,” or “it seems to be,” or “it may be,” and the like, all imply the possibility of its being *otherwise*; in fact, of its being the direct contrary. Such mere surmises and suppositions so thoroughly vitiate the argument as to render it quite worthless. To prove an event to be impossible, you must shew it to be so from what *must* be, not from what *may* be: this latter form of expression is simply a confession of *doubt* as to whether the

event be impossible or not. And even if the objector do not go the length of affirming any portion of the narrative to be impossible, but merely *untrue*, still he is interdicted from inventing collateral circumstances, and founding his adverse conclusion upon *them*. He must either shew that every conceivable train of circumstances necessitates the same adverse conclusion, or else he must shew that none other than those which he assigns can possibly be adduced. The attempt to prove a negative, merely from what *may be*, can do nothing more than prove the logical incompetency of him by whom the attempt is made. What *may be* may *not be*.

As an example of this inconclusive kind of reasoning, we may select, from an abundance of similar instances of logical infirmity, the futile remarks at page 43 of Dr. Colenso's Part IV. In reference to Genesis ix, 3, he says—"the Elohist records the permission to eat animal food, as given *after* the flood, in agreement with his account of the Creation, where we read i, 29. "And Elohim said, Behold I give you every herb seeding seed, which is on the face of all the earth, and every tree in which is the fruit of a tree seeding seed, to you it shall be for food." And then, to prove that "the Elohist" knew less about it than the Bishop, the latter reasons thus—

"The Jehovist, however, makes Abel a 'tender of sheep,' iv, 2: and, though sheep might, no doubt, have been kept only for the sake of their *wool* or *milk*, yet in iv, 4, the firstlings of the flock are sacrificed, and

only, or chiefly, their *fat seems* to have been offered. It *may be* fairly inferred that, according to the Jehovist, the rest *was supposed* to be eaten afterwards, as in the case of ordinary peace-offerings." To call this *reasoning* would be an abuse of the term: it *proves* nothing. And yet this is the logic by which the writer expects to persuade his readers that man *always* lived upon animal food!

That the second of the foregoing principles is a sound one will appear from reflecting that *every* hypothesis, which accounts satisfactorily for the event, is an admissible hypothesis; inasmuch as it supplies the desideratum:—it does all that is demanded:—*it accounts for the fact*; and therefore suffices to prove that the proposition which affirms the accounting for it to be *impossible*, is utterly untenable. He who *opposes* this proposition, by argument, is quite unshackled as to the range of possibilities from which he may select the materials for his reasoning. But he who undertakes to *maintain* it, by argument, must, to succeed, rigorously prove that, however extensive this range may be, it *cannot* supply the requisite means for constructing a sound counter-argument. His opponent may press into his service any possibility whatever; while he himself is precluded from advancing anything but realities: the *possible* circumstances which he may adduce in support of his proposition, may all be assented to *as possible*; but they can give no cogency to his reasonings, or weight to his conclusions: while to his opponent, possible circumstances—be they the

real circumstances of the case or not, are all that he is challenged to produce. In the arguments of the one, probabilities and conjectures, however reasonable in themselves, are inadmissible: in the arguments of the other, these and these only are all that are called for. The allegation, be it remembered, is—not that the event cannot be accounted for on a specified hypothesis, but that it cannot be accounted for on any conceivable hypothesis whatever.*

There is another matter, too, which the common practice of anti-Bible critics renders it necessary for readers of their works to be awake to. It is not allowable, in any critical examination of a portion of Scripture, for the critic to eliminate the Divine Agency where the narrative distinctly declares it to have operated. This is not a “free handling,” but a *false* handling. If you alter the conditions or circumstances under which the recorded events are stated to have occurred, you corrupt the text of the story. In this vitiated form, the results of criticism upon it are value-

* As Dr. Chalmers justly observes:—“It does not fall upon the defenders of Moses to bring forward positive or specific proofs for the truth of any system reconcileable with his history, beyond the historical evidence of the history itself. A thousand systems might be devised, one of which only can be true, but each of which may be consistent with all the details of the book of Genesis. We cannot, and we do not, offer any one of these systems as that which is to be positively received; but we offer them all as so many ways of disposing of the objections, and while upon us lies the bare task of proposing them, upon our antagonists lies the heavy work of overthrowing them all before they can set aside the direct testimony of the sacred historian, or assert that his account of the creation is contradicted by known appearances.”—*Chalmers's Works* (Constable & Co., 1855), vol. v. p. 630.

less ; inasmuch as they apply, not to the story itself, but to something different.

Nor is it allowable, in such writers, when professing to take any revealed narrative—this “Story of the Flood,” for instance, in all its integrity, to argue as if the supernatural element was declared to be in the *instruments* employed, instead of solely in the *Agent* using them:—as if the materials themselves were affirmed to be obscure and mysterious, and such as nature disowns ; and then to appeal to nature’s verdict against the physical possibility of the occurrence. Whereas Divine interposition in the natural world—always excepting those *miracles*, more strictly so called, with which nature has nothing to do, is analogous in kind, though immeasurably more potent in degree, to *human* interposition in the natural world. In both cases, mere matter is made subordinate to *mind* : its primitive arrangements are forcibly disturbed, and its dormant energies coerced into activity, by that which is not matter, but mind. In human affairs, all this is conceded : it is admitted that the monument of London, and the cathedral of St. Paul’s, manifest the mind of Christopher Wren ; the steam-engine, the mind of James Watt ; the Bridgewater Canal, the mind of Richard Brindley ; and the Britannia Bridge, the mind of Robert Stephenson : and the deluging a world with water exceeds the magnitude of these and such like performances, only in proportion as the Divine Mind exceeds in power the human ; the mere physical agencies equally existing for both.

We shall only add, in conclusion, that it is a puzzle quite inexplicable by us, how men of even ordinary sagacity can admit the existence of a Supernatural Being, and yet, in a Record of events in which HE is distinctly declared to have been the immediate Agent, persistently deny the historical accuracy of that Record on the ground that it narrates supernatural acts. How can the direct acts of a Supernatural Power be otherwise than supernatural—and consequently inexplicable upon natural principles alone? HE *may* employ physical agents as means, or instruments; but HE *must* employ them as only Supernatural Power *can* employ them.

To suppose otherwise is to suppose not only that God abdicates his supremacy, but also the further impossibility, that the Creator of Nature becomes a part of his own creation. What is referrible solely to Nature, is referrible solely to the creature, and not to the Creator (directly) at all; unless we admit the contradiction that the creature *is* the creator. Man never does anything, knowingly, that nature can do for him: God never does anything but what nature alone cannot do. Nature did not originate itself: and all its regularly recurring phenomena are nothing more than so many manifestations, to human eyes, of unswerving obedience to originally impressed commands—to the edicts of an Almighty Legislator. The laws of Nature are but secondary causes; all implying a primary,—that is, a supernatural cause.

In the eloquent romance which M. Renan styles “The Life of Jesus,” the author affects to find evidence

of the unhistorical character of the New Testament, in those very features which people in general would expect it, if truthful, to present; and which they would more especially look for, as indispensably necessary to stamp with the impress of authenticity, every Record declared to be a Divine Revelation. He says:—"That the Gospels are in part legendary, is evident; since they are full of miracles, and of the supernatural."! Which is sheer nonsense. That the acts of a supernatural Being, can be *other* than supernatural acts, is as impossible as that the processes of Nature can be *other* than natural processes.

In terminating the present section, the writer may observe, that he is not singular in his advocacy of a post-diluvian creation. The same doctrine is urged with much earnestness by Granville Penn; and is countenanced by Dr. Pritchard, by Archdeacon Pratt, and also by Mr. Gosse, a living naturalist of high character and reputation.*

* See the *Comparative Estimate of the Mineral and Mosaical Geologies*, by Granville Penn, Esq., vol. II.; *Scripture and Science not at Variance*, by Archdeacon Pratt; *The Romance of Natural History*, by Philip Henry Gosse, F.R.S., &c.; and Dr. Pritchard's profound and comprehensive works on the *Physical History of Man*.

The first of the works here referred to, is a very elaborate, and we think valuable performance. The present writer considers, however, that Mr. Penn has indulged in more opposition to geology than was deserved, or than was even necessary for his main purpose; but his chapters on the Deluge are very much in accordance with what has been advanced in the preceding section, all of which was, however, completed before Mr. Penn's instructive volumes were seen by the writer of it. The substance of the article which follows "On the Rivers of Eden," is entirely due to Mr. Penn.

On the Rivers of Eden.

By a searching and laborious examination of all the copies of the Scriptures handed down to us in ancient manuscripts, it is admitted by the most eminent Biblical scholars, that certain marginal notes and illustrations written, as such, in the very early MSS., have, by subsequent transcribers, been incorporated into the text. There is great *à priori* likelihood that such should be the case. Scarcely and highly important manuscripts, earnestly studied by their possessors, would be very likely to receive on their margins an occasional amplification of what the reader might regard as deficient in circumstantial details: the great brevity of the Bible narratives would, here and there, offer a strong temptation to this; and a subsequent possessor of a MS.—thus enriched, as it would be considered to be, if the annotator had possessed high reputation for learning and piety—estimating the gloss as little short of inspired, might, in his own transcription, venture to introduce it into the text. That such has actually been done, the researches of Lowth, Marsh, and Kennicott have conclusively proved.

In reference to the four rivers of Eden, Mr. Granville Penn, in his learned work on the Mineral and Mosaical Geologies, offers these remarks:—

“In the second chapter of Genesis, there appears an internal critical evidence of an insertion of the 11th, 12th, 13th, and 14th verses, similar to that of the 4th verse in the fifth chapter of St. John’s Gospel; and

constituting, in a similar manner, a *parenthesis* intersecting the thread of the narration, and introduced solely for a similar purpose of *illustration*. It does not wear the character of the simple narrative in which it appears, but of the surcharge of a gloss or note of a later age, founded upon the fanciful traditions then prevailing with respect to the situation of the ancient Paradise. The reader will find evidence of the unconquered difficulty of reconciling this glossal description with true geography, if he consults Michaelis' *Supplementa ad Lex. Heb.* on the names of Eden, and of the four rivers mentioned in the four verses in question. From all these considerations, therefore, I have long been brought to a persuasion, on *critical* grounds alone, and without any relation to the particular argument of the present treatise, that those four verses were a *gloss* of very ancient date, which was received, and became incorporated, into the primitive text, either during the captivity, whilst the Hebrews were actually dwelling in the regions bordering upon the Hiddekel (or *Tigris*) and Euphrates, or soon after their return from that captivity, and before the translation of their Scriptures into Greek; and that the text and the *gloss* stood originally thus :—

And the Lord God had
planted a garden in Eden
from the first; and there
he put the man whom he
had formed. And out of
the ground the Lord God

had made to grow every tree that is pleasant to the sight, and good for food; the tree of life, also, in the midst of the garden, and the tree of the knowledge of good and evil. And a river went out of Eden, for (or after) watering the gar-

The name of the first is Pison; that is it which compasseth the whole land of Havilah, where there is gold; and the gold of that land is good: there is bdellium and the onyx stone.

den; but from thence (above) it was parted, and divided to four heads (or sources). And the Lord God took the man, and put him into the garden of Eden, to dress it, and to keep it, etc.

And the name of the second river is Gihon: the same is it that compasseth the whole land of Ethiopia. And the name of the third is Hiddekel; that is it which goeth in front of Assyria. And the fourth river is Euphrates.

“That the illustration intended by the gloss is unskilful, and does not answer to the text is manifest; for the *text* mentions only *one river*, whereas the gloss undertakes to describe *four rivers*. Michaelis shows, that the Hebrew for *heads* denotes *sources* in the Syriac and Arabic languages; and he expressly states, that it never signifies the *branches of a river* in the Oriental tongues. So that the historian relates:—that ‘God planted a garden in Eden—out of which Eden flowed a river which *had watered* the garden; but from thence, that is, upwards, above its exit, it was distributed to four parent heads, or *sources*, issuing four streams

which afterwards united, and formed *one river* at their departure out of Eden: the *four interior* converging streams, not the *one exterior united river*, irrigating the Eden in which was the *Garden*, or Paradise.'

"Thus, the final confluence of four contributory streams from the four sources or heads, to which the historian traces them *in Eden*, produced the *one river* discharging itself *out of Eden*, of which he speaks; which four confluent streams, therefore, cannot have any relation to the *four rivers* recited by the scholiast in the gloss."

"Since all the rivers named in the gloss have their origin in Armenia, the locality alone enables us to perceive, that its Hebrew author was deeply impressed with the traditions respecting the seat of the *renewal* of the human race; and that he confounded and identified it with that of its *origin*; and, that he thus violently applied to the latter, the characters properly belonging to the former, in which confusion he is very generally followed even at the present day. The fluvial description introduced into the four verses, cannot therefore be regarded, critically, as forming any part of the Mosaic history; and consequently, it can have no power to affect the strong evidence which has been deduced from that history, and from the sense of the ancient Jewish and Christian churches, of the destruction of the primitive earth by the waters of the Deluge."* Mr. Penn justifies the slight changes

* *A Comparative Estimate of the Mineral and Mosaic Geologies.* By Granville Penn, Esq. Second edition, vol. II., chap. xiv.

he has made in the received version of the above verses from Genesis, by a critical examination of the original Hebrew in his foot-notes.

It must certainly strike every reader, that the continuity of the narrative can be preserved only by the removal of the alleged interpolation: and it would appear inexplicable that the sacred historian should suddenly break off, in the midst of an orderly and consecutive narration of the most momentous of *past* events, to digress upon things of the *present*—and these, too, things of vastly inferior consequence; and then, again changing the tense, proceed with the narrative of the *past* transactions as if no such interruption had taken place. Besides; the style of Moses, in his record of man's creation and early history, is eminently brief, and condensed; while that of the scholiast is diffuse, and circumstantial. It is very probable that the latter would supply, in the margin of his MS., the information (derived from human research, or even from learned legend) which he thought he possessed, respecting the geography and treasures of the locality; but very improbable that Moses would have departed from his characteristic style, kept in abeyance his sole purpose, and interrupted the sequence of events in a narrative of the deepest interest, to speak of matters so unimportant, and so irrelevant.

We submit that these are reasonable inferences—regarding Moses as a mere uninspired *man*, taking upon himself the great task of writing the history of the creation from some light imparted to him on the

subject, he knew not how, or by whom.* But as a *Divine Revelation*, in the recording of which Moses was little more than the pen in the hand of the Almighty, it is in the highest degree improbable that the passages in question should have formed part of the communication—that a digression should have been made to inform the human instrument on geographical matters, then patent to human observation, by *inspiration*.†

We may remark, however, that we do not see any force in Michaelis' shewing that *heads* denote *sources*, and never the *branches* of a river; nor do we see the inference from this, that it was not a *single* river, pass-

* A *portion* of this history would have reached Moses, no doubt, by tradition from Adam, through Methuselah, to Noah, and thence onward to Moses:—that portion, namely, which declares the origin of man ("Dust thou art"), and the circumstances of the Fall. But what has been called the "Mosaic Cosmogony" had not been communicated to Adam, or to any of the antediluvian patriarchs; at least, we have not the slightest ground for supposing that it had. Be this however as it may, Moses was the "chosen servant" first appointed by God to record those creative acts which the Creator alone could have revealed, or which could have been originally known only by inspiration. Whatever, therefore, may have come to Moses by tradition, only so much as was strictly true, and of Divine communication, could have had the Divine sanction; and this sanction was equivalent to a direct Revelation to the sacred writer himself.

† The author is well aware of the use which certain critics may make of these observations. They recommend us to read the Bible as we would read any other book, but they do not admit that we should read any other book (*Shakespeare*, for instance) as they enjoin us to read the Bible. *Glosses* have been discovered and pointed out in Shakespeare; but the writings of Shakespeare have been recognised, as such, nevertheless: they have not been repudiated as *all gloss*. Interpolations have been rejected from Shakespeare because they bear the marks of being non-Shakespearian.

ing through Eden, that, on its exit, branched off into four streams ; but *four streams* that united, on their exit, and formed a single river. In the Commentary of Keil and Delitzsch (Clark's Theol. Lib. 1864), the Hebrew text is stated to convey this meaning :—"The stream took its rise in Eden, flowed through the garden to water it, and on leaving the garden was divided into four heads, or *beginnings* of rivers, that is, into four arms or separate streams." (Vol. I., p. 81.)

But these points of verbal criticism, however interesting to Hebrew scholars, have little to do with the question as to whether or not the verses referred to above be a marginal gloss, introduced originally into an early MS., and then transferred to the text by a later transcriber. It is plain, however, that whoever the scholiast may have been, *he* must have understood the text in the sense just quoted ; and which certainly is that which our version has retained.

(For an account of various opinions respecting Eden and its rivers, see the article EDEN, in *Smith's Dictionary of the Bible*.)

NOTE.

ON THE DIVINE REST.

"And God blessed the seventh day, and sanctified it : because that in it he had rested from all his work which God created and made." (Gen. ii., 3.)

It would be quite contrary to the express declara-

tions of Scripture, in numerous places, to regard the rest here spoken of as implying a state of continuous and uninterrupted repose :—a total and eternal cessation from the exercise of divine power in reference to the things of the material world.

Nevertheless, there are passages in the inspired volume which clearly imply that, even in the enlarged sense just mentioned, the Divine Being did, and eternally will rest, from the performance of certain of his “works” :—the works, namely, that He *created and made* : that there will, thenceforward, be no fresh exercise of *creative* power, no actual addition to the matter then and now in existence. The creations of material things, *out of nothing*, are peculiarly, and exclusively, the personal acts of the Almighty :—they are performances which were never delegated to any angelic or inferior being ; and it was from these “works,” so immediately and essentially *his own*, that God rested on the seventh day.

On any other interpretation of the Divine Rest, we should find it impossible to reconcile certain passages of Holy Writ with the text quoted above ; and even with each other. For example, compare the 9th verse of the third chapter of Hebrews :—“When your fathers tempted me, proved me, and saw my works forty years”—with the 10th verse of the chapter next following :—“For he that is entered into his rest, he also hath ceased from his own works, as God did from his.” In this latter passage, by God’s works, “works of creation,” exclusively, must be meant. “My father

worketh hitherto, and I work." These words of the Saviour refer, exclusively, to such visible performances (in so far as *material* things are concerned) as are not independent of pre-existing matter.

Bishop Colenso is, therefore, in error when he affirms (p. 190, part IV.) that the production of new organisms, after the Deluge, would be a violation of "the Divine Sabbath." We submit that these new productions were not new *creations* out of nothing, but formations out of *something*:—out of the matter that had itself been created, out of nothing, previously: just as Adam was formed "of the dust of the ground."

In our article on these post-diluvian productions, we have not scrupled to call the new races of animals, &c., *creations*; but we there warned the reader that the term "creation" was employed in a restricted sense, and not as implying any actual addition to the *matter* previously in existence. The Bishop appears to regard "the Divine Sabbath" as a sort of divine torpor—as implying a cessation for ever from all manifestation of power—either mediately or immediately—in the material universe, after the work of the six days. But, just as man's Sabbath is a rest from man's handiwork,—from work peculiarly *his own*, and not a period of dormant repose and inactivity, so the Divine Sabbath is exclusively a rest from those creative works which are peculiarly, and pre-eminently, *God's own*; inasmuch as they were executed directly by HIMSELF,—by his Almighty fiat alone,—by uncommunicated, and incommunicable, power—"by the breath of his mouth."

We do not know from the narrative of the six days' work, how *many* of the living organisms then produced were creations out of nothing: we are certain that Adam and Eve were *not* such creations, because we are distinctly told that they were not. Nevertheless, they are said in Scripture to have been *created*, since, in the original, the word "create" does not imply, necessarily, "out of nothing." And we have thus authority sufficient for employing this term as we have done in our article "On the post-diluvian Creations;" and we are further confirmed in the propriety of the word, as there applied, by the following remarks upon it by the Regius Professor of Hebrew in Oxford,—the Rev. Dr. Pusey, who, in a communication to the late Dr. Buckland, writes thus:—

"Two opposite errors have, I think, been committed by critics, with regard to the meaning of the word *bara*, 'created'; the one, by those who asserted that it *must* in itself signify 'created out of nothing'; the other by those who endeavoured, by aid of etymology, to shew that it *must* in itself signify 'formation out of existing matter.' In fact, neither is the case; nor am I aware of any language in which there is a word signifying *necessarily* 'created out of nothing'; as, of course, on the other hand, no word when used of the agency of God, would, *in itself*, imply the previous existence of matter. Thus the English word 'create' by which *bara* is translated, expresses that the thing created received its existence from God, without in itself implying whether God called that thing into

existence *out of nothing*, or no; for our very addition of the words ‘out of nothing,’ shews that the word ‘creation’ has not, in itself, that force; nor, indeed, when we speak of ourselves as creatures of God’s hand, do we at all mean that we were *physically* formed out of nothing. In like manner, whether *bara* should be paraphrased by ‘created out of nothing’ (as far as we can comprehend these words) or, ‘gave a new and distinct state of existence to a substance already existing,’ must depend upon the context, the circumstances, or what God has elsewhere revealed, not upon the mere force of the word. This is plain, from its use in Gen. i. 27 of the creation of man, who, as we are instructed, chap. ii. 7, was formed out of previously existing matter, the ‘dust of the ground.’ The word *bara* is, indeed, so far stronger than *asah*, ‘made,’ in that *bara* can only be used with reference to God, whereas *asah* may be applied to man. The difference is exactly that which exists in English between the words by which they are rendered, ‘created’ and ‘made.’ But this seems to me to belong rather to our mode of conception than to the subject itself; for ‘making’ when spoken of with reference to God, is equivalent to ‘creating.’*

Dr. Pusey’s Note in Buckland’s *Geology and Mineralogy*: Edition of 1858, p. 19.

* Yet *creating* and *making* need not be contemporaneous acts.

SECTION IV.

SPECIMENS OF DR. COLENZO'S LOGIC.

IN the present article we propose to give a few samples of the reasoning which Dr. Colenso employs to prove the incredibility of certain events recorded in the Pentateuch. Many persons upon whose minds the writings of this author have exercised a baneful influence, have never examined the writings themselves at all. They have received their impressions wholly from the cheap free-thinking publications of the day, wherein the author's *results* only, however unwarrantably arrived at, are represented to the reader as either the conclusive deductions of modern science, or as the no less sound inferences of reason and common sense. Whatever may have been the degree of predisposition to receive these impressions, we cannot but think that they would have been greatly weakened by a subsequent perusal of the books themselves ; which are replete with logical fallacies of the most transparent kind. And as to science, although the word "science" is repeated *ad nauseam*, the thing itself will be sought for in vain in the writings alluded to. Of the logical fallacies we shall here select a few specimens ; and shall also give an example or two of what Dr. Colenso regards as science.

1. In Exodus xvi. 16, it is recorded, in reference to the manna supplied to the Israelites in the

Wilderness.—“This is the thing which the Lord hath commanded, Gather of it every man according to his eating, an omer for every man, according to the number of your persons; *take ye every man for them which are in his tents.*”

Dr. Colenso takes the words here italicised for the subject of his criticism, and fastens upon the word *tents*. How did the Israelites get these tents? He answers this question by denying their existence; and he proves his position thus: “If they had had tents, how could they have *carried* them?” [That they must have been *carried out of Egypt* he assumes.] “They could not have borne them on their shoulders, since these were already occupied with other burdens.” And after sufficiently magnifying these burdens, to prepare for his foregone conclusion, he infers, of course, that the Israelites could not have borne the additional weight. The first part of the proof is thus disposed of: he then enters upon the second part, as follows—“There were *cattle* certainly, which might have been turned to some account for this purpose, if trained to act as pack-oxen.” [The more suitable animals, *asses*, were, of course, left behind.*] “But then, what a prodigious number of trained oxen would have been needed to carry these 200,000 tents! One ox will carry 120 lbs.; and a *canvas* tent, that will hold two

* Why Dr. Colenso should have suppressed the mention of *asses*, is best known to himself, as he *knew* that these were among the beasts. “Every firstling of an ass thou shalt redeem with a lamb.”—Ex. xiii. 13.

people, and a fair quantity of luggage, weighs from 25 to 40 lbs. Of such tents as the above, with poles, pegs, etc., a single ox might, possibly, carry *four*, and even this would require 50,000 oxen." [The *wagons* having been left behind with the asses.] "But these would be of the lightest modern material, whereas the Hebrew tents, we must suppose, were made of *skins*, and were, therefore, much heavier. Besides this, these latter were *family* tents, not made merely for soldiers or travellers, and required to be very much larger for purposes of common decency and convenience. One ox, perhaps might have carried one such a tent, large enough to accommodate ten persons, with its apparatus of pole and cords: and thus they would have needed for this purpose 200,000 oxen. But oxen are not usually trained to carry goods upon their backs as pack-oxen, and will by no means do so, if untrained."* And thus concludes the second part of the proof.

Now the logic of all this is as follows:—

The Israelites, under the *assumed* conditions, could not carry all the tents themselves.

The oxen could not carry all the tents themselves.

Therefore men and oxen together,—the burden being divided between them—could not carry all the tents themselves: hence, since the asses, of *course*, carried *nothing*, the tents must have been all left behind.

Q. E. D.

But why this wasteful expenditure of logic at all?

The author had already proved—*experimentally*

* Colenso, part I., p. 47.

proved, that the Israelites could not have carried even *themselves* out of Egypt; and everybody would have assented, without proof, that neither could the tents, with their "apparatus of poles and cords," have carried *themselves*.

Leaving however the *reasoning* wholly out of consideration, just look at the most unwarrantable premises on which it is based. These affirm, as a fact obviously implied in the command—"Take ye every man for them which are in his tents," that *every* man reposed under a tent; whereas the other extreme, namely, that *no man at all* reposed under a tent, is the more reasonable inference from the passage. For the command is—1st, "Gather of it every man according to his eating;" and 2nd, "Take ye every man for them which are in his tents"; that is, evidently, for his family, the women and children, who may have been the *only* occupants of those tents. That the *single* men, *if* they had tents, had them to themselves, there can, of course, be no question; and yet *every* occupant of each bachelor-dwelling, "*every man*" is commanded to go out and gather "for them which *are in his tent*"—his *tenantless* tent; an absurdity which completely destroys the hypothesis of the single men occupying tents at all.

Did the Bishop never see a gipsy tent? It is formed with three sticks, covered usually with the woman's red cloak and a shawl; and similar habitations the Israelites, most likely, extemporised in the wilderness. We do not believe that they carried from

Egypt any "apparatus of poles, and pegs, and cords"—as though they had been supplied by Edgington—at all. Covering would have accumulated daily from the skins of the sheep and oxen slaughtered for food, and for sacrifice.

[But one covering they had, of which the Bishop takes no account. I read in Psalm cv. 39: "*He spread a cloud for a covering*, and fire to give light in the night." So that, with this cloud to cast its refreshing shade between them and the noon-tide heat, and at night the pillar of fire to warm and cheer them, they would not require the same amount of protection as might otherwise have been necessary. Happy people! "The Lord was their keeper; the Lord was their shade upon their right hand, so that the sun did not smite them by day, nor the moon by night." (Psalm exxi. 5, 6.)]*

2. Of a piece with the foregoing are the Bishop's assumptions and reasonings in reference to Ex. xiii. 18.—"The children of Israel went up *harnessed* out of the land of Egypt." On which he says: "The word here rendered *harnessed* appears to mean *armed*." But whatever to the Bishop it may *appear* to mean, to every body else it must mean simply *equipped* for the journey; and this interpretation of it is fully supported even by the Bishop's own remarks; although he seems uncon-

* Extracted from "*Moses or the Zulu?* A detailed Reply to the Objections contained in Parts I. and II. of Bishop Colenso's Work. By the Rev. W. Wickes, M.A., formerly Scholar of Trinity College, Cambridge," &c., &c.

We cordially recommend this very able and instructive examination of Dr. Colenso's criticisms to the earnest attention of all whom those criticisms have bewildered or misled.

scious of their real logical tendency. He says :—" It is, however, inconceivable that these down-trodden oppressed people should have been allowed by Pharoah to possess arms, so as to turn out at a moment's notice 600,000 armed men. If such a mighty host had had arms in their hands, would they not have risen long ago for their liberty, or, at all events, would there have been no danger of their rising ?" Now the only *fair* conclusion from this "inconceivable" state of things is, that "harnessed" could not mean "armed." If people are harnessed for battle, they are armed ; if for a journey, they are equipped for travelling. And, strangely enough, the Bishop actually describes this equipment in a subsequent page (p. 55), when speaking of "the specific directions—about choosing the lamb, killing it at even, sprinkling its blood, and eating it, with unleavened bread, 'not raw, nor sodden at all with water, but roast with fire,' 'with their loins girded, their shoes on their feet, and their staff in their hand'" —that is, harnessed for the journey.

Again : he says (p. 49), "It cannot surely be supposed that the strong, able-bodied, men kept regular ranks, as if marching for war, when they were only hastening out of Egypt, and when their services must have been so much required for the assistance of the weaker members of their families, the women and children, the sick, infirm, and aged." ["There was not one feeble person among their tribes."! (Psalm cv. 37.)]

What then is the fair inference, "the *unavoidable*

inference, from this view of what "cannot surely be supposed"? Why that it is a false view; that the people were *not* marching for war. Yet it does not follow that because *all* were not armed, that, therefore, *none* were armed: but, as in the case of the tents, considered above, this is the Bishop's conclusion:—If there were not tents for all, there were not tents for any; if there were not arms for all, there were not arms for any!

3. If it were not for the serious importance of the matters discussed, there would be something irresistibly amusing in Dr. Colenso's mode of dealing with them. In commenting upon the journey of the Israelites from Rameses to Succoth, after dwelling upon the preparatory impossibilities, he says (p. 63)—
"And now let us see them on the march itself. If we imagine the *people* to have travelled through the open desert, in a wide body, 50 men abreast, as some suppose to have been the practice in the Hebrew armies, then, allowing an interval of a yard between each rank, the able-bodied warriors alone would have filled up the road for about *seven* miles, and the whole multitude would have formed a dense column more than *twenty-two miles long*,—so that the last of the body could not have been started till the front had advanced that distance, more than two days' journey for such a mixed company as this." "And the sheep and cattle—these must have formed another vast column, but obviously covering a much greater tract of ground in proportion to their number, as they would not march, of course,

in compact order. Hence the drove must have been lengthened out for many long miles." Yes :—and, then again, there were no people to drive and direct them ; for the whole multitude were engaged in filling up the Bishop's 22 miles ! We cannot help thinking, however, that if his lordship had been one of the rank and file, he would have disregarded military discipline as courageously as he has disregarded ecclesiastical discipline ; and have got astride of one of these beasts, or even have jumped into a wagon.

4. "The *people*, we are told, were supplied with manna. But there was no miraculous provision of food for the herds and flocks. They were left to gather sustenance, as they could, in that inhospitable wilderness" (p. 65). *Where* is this recorded ? As "we are told" that the herds and flocks *lived* 40 years, we presume that, without being told, we may reasonably conclude that they were supported by *food* 40 years.

"But," says the Bishop, "it may be well now to quote one or two passages from other writers, which yet more plainly develope the absolute barrenness of this wild and desolate region, as it now appears, and as, we have every ground from the Bible itself to believe, it must then have appeared also" (p. 78). The Bishop then gives the following from Conder's "Modern Traveller."

"In winter, when the whole of the Upper Sinai is deeply covered with snow, and many of the passes are choked up, the mountains of Moses and Saint.

Catherine are often inaccessible. Mr. Fazakerly, who ascended them in the month of February, found a great deal of snow, and the ascent was severe. It is difficult, he says, to imagine a scene more desolate and terrific, than that which is discovered from the summit of Sinai . . . Of the view from Mount Saint Catherine he says, "The view from hence is of the same kind, only much more extensive than from the top of Sinai. It commands the two gulfs of Akaba and Suez; the the island of Tiran and the village of Tur were pointed out to us; Sinai was far below us; all the rest, wherever the eye could reach, was a *vast wilderness, and a confusion of granite mountains, and valleys destitute of verdure.*"

Now in the first place, the Israelites were confessedly not there in Mr. Fazakerly's February: and in the next, we would ask—How can "we have every ground from the Bible to believe" in "the absolute barrenness" of the region *then*, when the Bible expressly declares that a vast multitude were supported there for 40 years? Is not this substantially a declaration that the barrenness was *not* absolute? In further support of this assertion of absolute barrenness, at the time of the sojourn of the Israelites, the Bishop quotes the following passage, from Dean Stanley, as to what the region is *now*," when the fertilizing streams of water, "out of the rock of flint," have *probably* ceased to flow, and the pools, in which the Israelites "washed their clothes,"* been dried up. "The general character of the wadys,

* Exodus xix. 14.

as well as of the mountains of Sinai is entire desolation. If the mountains are naked Alps, the valleys are dry rivers. For a few weeks or days in winter, these wadys present, it is said, the appearance of rushing streams. But their usual aspect is absolutely bare and waste, only presenting the image of thirsty desolation the more strikingly, from the constant indications of water, which is no longer there."

Now every *river-bed*, however dry *now*, must once have been a channel for a river; and where there is water there is, in general, verdure. The preceding quotation, while it testifies to the present "thirsty desolation," equally testifies to "the constant indications of water which is no longer there." But even the desolation and barrenness, above described, is far from general: "The nomadic Bedouins are still now in the habit of cultivating the districts which appear suitable for agriculture; they live during this time in tents, and change their abode after every harvest. Thus several tribes may be met with even now, which are at the same time nomads and agriculturists; and nothing forbids us to suppose the same practice among the Israelites, during their sojourn in the desert, especially as some parts of the peninsula are extremely inviting to agriculture."

This quotation from Kalisch is given by Dr. Colenso himself, for the purpose of shewing the inapplicability of the facts mentioned, to the case of the Israelites: "Spots of verdure," says the Bishop, "which might be cultivated by a few hundreds of Arabs, would not

suffice for the wants of two millions of people. And even if it did, we have still, as before, to explain how the *sheep and oxen* lived on in the dreary waste."

But how do the camels, &c., of the "few hundreds of Arabs" live on in that same dreary waste now? And since spots of verdure, cultivated by a few hundreds, suffice for the few hundreds, spots cultivated by many hundreds would suffice for the many hundreds. The Bishop here *assumes* either that the spots actually cultivated by these few Arabs include all that can *possibly* be cultivated; or that, of two millions of people, only a few hundreds cultivated. He assumes, too, all along, that every wady, river, and water-spring, that was there 3,000 years ago, is there precisely the same *now*: that as they are dry now they were dry then,—have been dry ever since,—in fact, that they were never otherwise than dry; in other words, that river-channels never had rivers!

Now we wish it to be clearly understood that, in thus combating the Bishop's logic, we are not attempting to *verify* "the Mosaic Story." The Bishop himself, though unconsciously, does that, in so far at least as he confirms the recorded fact of the great, but not universal, desolation and barrenness of the natural soil. To prove it to have been fertile, would be to prove the untruthfulness of the story. If there had been natural fertility, why should there have been any supernatural interposition—any miraculous provision of food and water? The more extensive and complete the barrenness, the greater the need for what the nar-

rative declares to have been miraculously provided. This exceeding need, everything the Bishop adduces goes to shew to have actually existed. For *his* purpose he ought not to have done this: or, having done it—thus confirming the *truth* of a part of the story, he should have proceeded to shew that it was the *other* part that was false,—the *supernatural* supply of what nature could not furnish;—to prove, in fact, that no Power *could* have “brought forth water out of the rock of flint, and fed His people in the wilderness with manna” (Deut. viii. 15, 16). But if, as indeed seems likely, the Bishop would concede this also, namely, that the *people* were miraculously fed, then it would remain for him to prove that the sheep and oxen were *not* miraculously fed, and therefore must all have perished of hunger; that is, that although the difficulty were overcome as to the people, it could not have been overcome as to the flocks and herds.

He is certainly prudent enough to withhold the attempt at such a proof; and although he evidently does not believe what, for argument sake, he concedes, yet these concessions are fatal to his case. In reference to the statement—“It is well known that the inhabitants of these climates require comparatively but little food for their subsistence, and the support of their physical strength,” he asks—“Is the same true of the sheep and oxen of these climates?” And when it is said—“Abundance or superfluity would have led them away from their great aim, the conquest of Canaan, especially after so long wanderings; whilst

the scarcity of their subsistence kept their longing, after their better and permanent abodes, uninterruptedly alive," he reiterates the old obstacle:—"Still the difficulty remains about the flocks and herds" (Part I. p.78).

The fact is, that the Bishop ought to have been content with his *experimental* proof, shewing the march out of Egypt "to be utterly incredible and impossible" (See ante, p. 5). But whether for the purpose of spinning out his book, or from an overweening confidence in his logical powers, he has conceded that, somehow or other, the Israelites *did* accomplish this incredible feat. Having thus assented to their sojourn in the wilderness, he is naturally led to inquire into the character of the region, and he finds it to be even now very much like what the Bible declares it to have been then. But the Bible does not directly and formally state that the sheep and oxen were *fed* during the forty years, only that they *lived* during the forty years. The omission cannot be denied: but it is not regarded by most persons as a matter of such vital importance to the integrity of the narrative as the Bishop ostensibly considers it to be. As the people themselves were sustained by supernatural help during all these years, we cannot but think that the flocks and herds were sustained by like help whenever there was need for it:—that pasturage was provided for *them* as well as manna for their owners. Dr. Colenso may, if he please, infer, from the omission alluded to, that the sheep and oxen continued to live on without food; but we prefer the lesser miracle.

Indeed, that pasturage was actually provided, even in the immediate neighbourhood of "desolate Sinai," is distinctly implied in Ex. xxxiv. (2, 3):—"And be ready in the morning, and come up in the morning unto Mount Sinai, and present thyself there to me in the top of the mount. And no man shall come up with thee, neither let any man be seen throughout all the mount; *neither let the flocks nor herds feed before that mount.*"

The prohibition not to feed at a specified place, clearly implies the existence of food at that place; and further, the designation of the locality where the flocks and herds were *not* to feed implies the existence of uninterdicted pasturage for them elsewhere. This provender did not miraculously fall from heaven, as the manna did, but sprang up from the yielding earth; fertilized either by genial showers, or by the more abundant supply of water from the rocks.

Wherever water naturally existed, *there* would be pasturage, then, as now; and wherever water was supernaturally supplied, pasturage would follow.* "He clave the rocks in the wilderness, and gave drink as out of the great depths. He brought streams also out of the rock, and caused waters to run down like rivers."

* Speaking of Wady Kyd, one of those "little spots of greater luxuriance, which are found here and there in the Sinaitic peninsula," Burckhardt says—"It is, in fact, the most romantic spot I have seen in these mountains. The source of the rivulet is half an hour higher up the valley, the deep verdure of which forms a striking contrast with the glaring rocks, shewing that, *wherever water passes in these districts, vegetation invariably accompanies it.*"

(Ps. lxxviii. 15, 16.) “He turned the wilderness into a standing water, and dry ground into water-springs.”

(Ps. cvii. 35.) This is surely enough: and sufficiently answers the question—How were the flocks and herds *fed*, when the natural verdure, for want of nature’s own refreshing moisture, failed?

In reference to Burekhardt’s testimony, quoted in the preceding foot-note, Dr. Colenso says,—“Bearing in mind that two millions of sheep and oxen, allowing a space of three feet by two feet as *standing* ground for each, would require, when packed together as closely as in a pen in a cattle market, nearly 300 acres of land, it seems idle to expend more time in discussing the question, whether they could have been supported in the wilderness by the help of such insignificant wadies as these, which a drove of a hundred oxen would have trampled down into mud in an hour.” (Part I. p. 81.)

The only Omnipotence which Bishop Colenso recognizes in his book, is what he calls “the omnipotence of imagination,” and it is this that serves him at every turn. It has here supplied the “two millions of sheep and oxen.” Whence, but from his own unbridled imagination, could they possibly have come? Does he think that the Israelites drove all these out of Egypt for mere *amusement*; or that they were, throughout their long and wearisome journey, too *dainty* to eat beef and mutton?

And how could he dare to say, with the text just quoted staring him in the face (Ex. xxxiv. 3), that

“there is no provision whatever made in the Scripture for the support of the cattle.”! (Part I. p. 70.)

But it is impossible for Dr. Colenso, or for any one else, to prove by argument that any recorded events whatever could never have occurred, if he once admit the existence of Power to bring them about, in the Agent to whom the Record attributes them. Instead of the Bible, suppose he had taken “The Tales of the Genii”: is it not self-evident that he could never prove these tales to be incredible, except on the hypothesis that the existence of genii is incredible? Let him only concede the position that these preternatural beings, with all the powers with which the romance invests them, actually existed,—how can he possibly prove that they did not do what they are related to have done, and what, it is admitted, they *could* do? To dispute the genuineness or authenticity of the History would be quite reasonable, as also to deny the accuracy of any specified translation of it from the original; but whatever is beyond the province of mere literary criticism cannot, on any rational principle, be disturbed. Inconsistencies and contradictions may be fairly enough alleged, and discussed; and received verbal meanings and renderings philologically argued: but to deny the *possibility* of acts said to have been performed, by agency competent to perform them, and admitted to have been present, is simply absurd.*

* How Bishop Colenso has succeeded in this other portion of his work—that devoted to what is more strictly Biblical criticism, the reader may see by consulting Mr. Wickes's Detailed Reply, already referred to; and

We feel constrained, however, to acquit Bishop Colenso of any such absurdity in reference to the matter here discussed. But he has avoided it only by the unfair stratagem of altering the essential circumstances of the narrative, and replacing them by others which that narrative not only does not acknowledge, but repudiates. The story he criticises is not that of the Exodus, but something quite different. He has changed the agency :—taken the work out of the hands of God, and put it into the hands of nature :—replaced the sovereign by the subject, the general by the subaltern, and criticised “the play of Hamlet with the part of Hamlet left out.” His business was to prove that the LORD GOD did *not* bring the children of Israel out from Egypt; and that HE did *not* sustain them in the wilderness; whereas all he attempts is to shew that no other power *could*,—the very thing which the narrative distinctly and emphatically declares; and to impress which fact on the mind was the very object for which it was written.

It is plain, therefore, that the author eliminates the prime Agent in the recorded transactions—the *avowed* Agent, and the only competent Agent. And, in His stead, introduces another, a confessedly *incompetent* agent; and, under this new condition,—this change of

by perusing the tracts “by Two Working Men,” entitled *The Bible in the Workshop*.

Besides these excellent performances, there are no doubt many others, called forth by Bishop Colenso’s rash publication, which satisfactorily dispose of the objections advanced in it; but which the present writer has not seen.

hypothesis, he comes, of course, to an adverse conclusion. He certainly deals with *a* story of an Exodus, just as he before dealt with *a* story of a Flood ; but he has no right to palm off these tales as the genuine stories of the Bible. The events recorded in the latter are perfectly credible—supernatural power being *present* : the like events, reiterated in the former, are perfectly incredible—supernatural power being *absent*. The events in the spurious story *must* be incredible, if those in the real story are true. For, as already observed (p. 67), it is as *impossible* for the acts of a supernatural Being to be other than supernatural acts, as it is for the processes of nature alone to be other than natural processes. We have quoted Dr. Colenso's assertion that "spots of verdure, which might be cultivated by a few hundreds of Arabs, would not suffice for the wants of two millions of people." This is no more true, than it is true that a few loaves and fishes, which might satisfy the hunger of five or six persons, would not suffice for as many thousands. Suppress Omnipotent Power, and both statements *are* true : introduce that Power, and both are false.

A single oasis in the desert, continuously renewed by Almighty Power, like the "barrel of meal," would never waste ; and a single insignificant watercourse, replenished by the same Hand, like "the cruse of oil," would never fail.

In his own stories of a Deluge and an Exodus, Dr. Colenso may reject the hypothesis of an Omnipotent Being if he so please ; but he cannot fairly and faith-

fully discuss the Bible stories of these events,—he cannot discuss *them* at all, without admitting that hypothesis. Deny the essential conditions on which *any* story is based, or out of which the events arise, and you at once bar all discussion of the narrative itself:—you summarily *reject* it altogether. By changing the stipulated conditions, you may indeed shew that, in the altered circumstances, the events would be impossible: but surreptitiously to thus corrupt the text of the story, in order to falsify its details, is a most unworthy stratagem to effect a most unworthy object.

And the Bishop of Natal has repeatedly laid himself open to the charge of descending to this trick; and readers of his book have need to exercise vigilant caution against being entrapped by such devices: they must not only test the quotations from other writers, but also the quotations from even the Bible itself. What are we to think of merely the literary honesty of a writer who, to magnify the difficulties of a journeying community, oppressed with heavy burdens, points exclusively to untrained oxen, as their only means of relief; when the fact stares him in the face that they had asses as well?

Again, after commenting upon the testimony of Dean Stanley to the fact that around “desolate Sinai” there are oases rich in vegetation, he says—“I have the more closely examined and carefully weighed the above arguments, because we may be certain that, by so able and earnest an advocate, everything has been

said that well could be said, to make it any way credible, that the means of support could have been found for so large a body of cattle in the peninsula of Sinai, *without a special miracle, of which the Bible says nothing*".!

So far from this being the case, the Bible says *everything*, that a candid reader of it can require, to shew that the Exodus and sojourn in the wilderness were throughout a *continuous* miracle. But on what ground does the Bishop assume that there *was* "so large a body of cattle in the peninsula of Sinai"? The *fair* inference from the narrative is, that, whatever may have been the extent of the flocks and herds upon quitting Egypt, the number must have very greatly decreased even before reaching Sinai. There must indeed (according to the story, as well as according to common sense) have been actual scarcity to a very painful degree, otherwise none of the Israelites could have excusably murmured for *flesh*: nor, but for this palpable scarcity of flesh, would there have been any occasion for the miraculous supply of quails (Ex. xvi. 13). The timely relief thus sent proved the pressure of the necessity, and the reasonableness of the complainings.*

It would be wearisome however to enumerate even a tithe of the textual perversions, the false reasonings, and the contemptible puerilities, with which the writings of this author abound; and to examine them at length: we shall therefore touch but very briefly upon one or two additional specimens.

* See note 2, at the end of this section.

5. He repudiates the notion that animal food was not consumed by the antediluvians, for he says ; (p. 221, Part IV.), “ Even in the eating of *vegetables* by men, or *grasses* and *leaves* by animals—nay, even in the drinking of water,—there must have been abundant destruction of animal life.” *Must* there ? Of necessity was it *impossible* that vegetables could have been created, without minute creatures, to feed upon them, being created *too* :—for water to have been created without a creation of animalcules *also* ? But, even admitting this inexorable necessity to have been laid upon the Creator, yet we think that Adam may have eaten of the vegetables, and have drunk of the waters of Eden, without disobeying any injunction to abstain from animal food ; and that Noah may have considered his liberty enlarged, as to his provender, when, in addition to his former vegetable food, animal “ meat ” was permitted to him. And we are inclined to think that even Bishop Colenso himself, if ordered by his medical attendant to abstain rigidly from animal food for a week or two, would have no idea that he was violating the restriction by swallowing a glass of water, animalcules and all. If the interdict, as to *animal-food*, were regarded as extending to *animalcule-food*, the patient would be inevitably doomed to certain starvation, in a very short time. Animalcules are even inhaled from the atmosphere, in the act of breathing.

6. Quoting Genesis iii. 17, 18, he says (Part IV. p. 145) “ Here the ground is represented as cursed for man’s sake, and on this account bearing briars and thorns,

and requiring to be cultivated with hard labour. But geology shews that the state of things upon the Earth, before man appeared upon it, was just the same as it is now. There are no signs of any curse having passed upon the Earth. Thorns and briars were as plentiful in the primeval world as they are now. The same abundant crop of weeds would have grown up, under the same circumstances, *then as now*, on any ground uncared-for." Now really what is the use of telling us that "Geology shews that the state of things upon the Earth *before* man appeared upon it, was the same as it is *now*"? Geology is not called upon to shew what the state of things was *before* the specified period, nor *after*: but *at the very time*. Geology is here summoned into the witness-box merely to declare that about "the state of things," during the short period between man's creation and the fall, it has not a word to say: it must therefore "stand down." But the Bishop himself *has* something to say. "The same abundant crop of weeds would have sprung up, *under the same circumstances*, then, as now." True.

7. In reference to the text—"They sewed fig-leaves together and made themselves aprons," will it be believed that the Bishop asks—not in joke—but seriously:—Where did they get needles and thread? He quotes and endorses the language of Dr. Thomas Burnet, (Part IV. p. 151): "The text says, they sewed together fig-leaves and made to themselves girdles. Here we have the first step in the art of sewing. But whence had they a needle, whence thread?" Aye: and a *thimble*?

Now let us suppose that Eve's workbox really had a supply of these useful implements:—say Whitechapel sixes, and Arnott's patent sewing cotton:—Does the Bishop imagine that Eve would have been such a goose as to have used *them* for the purpose of stitching her fig-leaves together? Why if, in her innocent ignorance, she had been so inconsiderate, she would have found her fragile workmanship soon give way; and, after only a very short experience, would have discovered that her object was but half accomplished.

8. Of course, as might be anticipated, the more complete clothing, supplied by God himself, is beset with like unconquerable difficulties; not, in this case, from the want of needle and thread, but from lack of the raw material. "God gave them besides, coats, made, forsooth, out of the skins of beasts. But here again we run into difficulties. To soften the matter, let us substitute in the place of God an *angel*. An angel, then, slew and skinned the animals, or stripped the skin from innocent and living animals. But this is the business of a slaughterer, or butcher, not of an angel. Besides, through this slaughter, *whole races of animals would have perished*; for it is not believed that more than two of each kind were created at first; and one without the other, its mate, would have had no offspring." (Part IV., p. 151.)

In the above extract, the author says—and says truly, "here *again* we run into difficulties" Yes: and he may expect *always* to run into difficulties, when he wilfully runs away from the Scriptures. That "God

gave them coats made out of the skins of beasts," is an unauthorised statement of his own, not a passage from the Bible. The uncorrupted text is this, "Unto Adam also and to his wife did the Lord God make coats of skins, and clothed them." (Gen. iii. 21.) And the artful addition, "skins of *beasts*," however flagrant the perversion, was seen to be *necessary* in order to prepare for the pre-determined conclusion; *any* conclusion, dishonoring to the Bible, would have answered the purpose equally well. But our object here is to shew the logical absurdity of all this. The writer believes, or affects to believe, that God *created* beasts at first: that He *created* bones, and flesh, and skin and all: that He created *one* skin for Adam:—Could He not create for him *another*? What animal was "butchered" and skinned, to clothe the *first sheep*? And why should any be butchered and skinned to clothe the first man? Whatever the "coats of skins" (or *coverings*) were, they were assuredly not what this writer pretends to think they were, or the Bible itself would have told us so. And look at the palpable absurdity to which the author's gratuitous hypothesis leads him, and which he is so far from being conscious of, that he actually invites special attention to it, by printing it in italics, namely, "*whole races of animals would have perished.*"! Now as this result, confessedly, did *not* ensue, it necessarily follows that the hypothesis from which it is deduced is a *false* hypothesis. And as it is *not* the hypothesis of the story, the question as to whether that story be fact or fable, remains, in so

far as the above *reasoning* affects it, entirely untouched. The writer does not appear to see that the *perishing* comes—not through anything recorded in the story, but solely and exclusively through the *slaughtering* he himself has *added* to it.

Dr. Colenso's book is fertile in such examples as we have now given; and those who are curious in absurdities of this kind, are referred, for amusement, to the several parts of which it is composed. But there are other matters in these writings which require a more serious attention. In speaking of the Report of the Committee of Convocation, in the preface to Part II, he says, "They do not impeach the scientific *truth*, but only the orthodoxy of my reasonings." We shall therefore devote a page or two here to the examination of the author's "science."

1. At page 110 of Part I, the Bishop says—

"By the census of 1851 the population of England was 17,892,149, and by that of 1861, 20,061,725, besides 2,249,355 emigrants between March 31, 1851, and April 8, 1861. Some of these emigrants would, of course, have died in the interval, if they had remained in England. We may suppose that 2,000,000 would have survived, making altogether the population in 1861, 22,061,725; so that the increase in 10 years upon 17,892,149 was 4,169,576, or more than 23 per cent." Now let us examine this piece of scientific reasoning.

If the emigrants had remained at home their number, 2,249,355, would have *diminished* to 2,000,000.

Emigrants are usually able-bodied people, neither aged nor infirm. Every other 2,249,355 persons, who *did* remain in England, would have diminished, in like manner, to 2,000,000, or *less*. Whence then the great INCREASE of "more than 23 per cent"?

2. At page 111, he says "If we take the certain historical datum in 130, (Note), and assume that the Hebrew population increased, like that of England, at the rate of 23 per cent. in 10 years, then, reckoning the males as about half the entire population, we shall find that the 51 males in G. xlvii would have only increased in 215 years to 4,375 instead of 1,000,000. So, too, Dan's one son would have required 558 years to multiply to 104,500, the total number of Danite males existing at the time of the Exodus, according to N. ii, 26, which we obtain by adding to the warriors there numbered, the due proportion of old men and boys."

It requires no science to see that this reasoning is wholly fallacious. Can any one of common sense believe that a healthy community consisting of 50 males and 50 females can amount to only 123 persons in 10 years? Why only *five* healthy pairs of adults would very likely have this progeny of 23 in that time—as the commonest observation proves. And the doctrine that "51 males would have only increased in 215 years to 4,375," is as scientifically false and ridiculous. Even upon his own wrong scientific principle, the Bishop's conclusion is incorrect. He says—"The number in question will be represented mathematically

by $51 (1.23)^{21\frac{1}{2}}$; and $\log 51 + 21\frac{1}{2} \times \log 1.23 = 1.7075702 + 21\frac{1}{2} \times .0899051 = 3.6405298 = \log 4375$," which is incorrect: this last number should be $4370\frac{1}{2}$.*

3. At page 103, Part IV., we have the following startling statement. "It is difficult to realize to one's-self the enormous size and distance from us of the fixed stars, and the awful solitude in which each separate star, and its little troop of planets, exists by itself, in the midst of the mighty universe."!

Where and when, we would ask, did Bishop Colenso make the wonderful astronomical discovery that "each separate star" has "its little troop of planets"? If he did not make it himself, we are perfectly confident that nobody did: where are the details of this sudden

* A numerical error like this, in any work full of algebraical symbols, we should not have thought it worth while to notice. But the above is the only bit of algebraical calculation in the book; and finding how little in that book was to be depended upon, we suspected, as we have found, that this also was wrong. Even the Bishop's "certain historical datum" of 23 per cent. increase in the population of England from 1851 to 1861, is greatly in error.—(See *Moses and the Zulu*, p. 61.) But if it had been correct, what possible analogy can there be between the rate of increase of Englishmen and that of the ancient Israelites, who "were fruitful and increased abundantly, and multiplied and waxed exceeding mighty; and the land was filled with them"?—(Ex. i. 7.)

At a meeting of the Ethnological Society, June 21, 1864, "Sir James. Alexander said that when he was engaged in 1835 in the Caffre war, they met with a race of native warriors who offered their services to the English as 'brothers,' and who stated that their tribe, numbering some 600, were descended from the ladies who were shipwrecked in the 'Grosvenor' East Indiaman. In 1836 he obtained a Dutch journal, giving an account of the transactions of the envoy sent to the Dutch Governor to rescue these ladies, but who, being married to native chiefs, refused to return to their own country. Such an increase in 53 years was very remarkable, but was possible, allowing six children to each of these six ladies."

stride in science—which must have produced a sensation in all the observatories of Europe and America—recorded? Is it possible that Dr. Colenso publishes it here for *the first time*, in a place where astronomers would never think of looking for it? Of all the myriads of stars, *astronomers* do not know if there be *one* attended by even a single planet; and yet here is a writer boldly affirming that *every* fixed star has a *troop of planets*,—“each separate star, and its little troop of planets.”!

If Bishop Colenso be really in a condition of mind which renders him fully accountable for what he writes (and there is reason to suspect otherwise), then we say that a more reprehensible instance of scientific *guess-work*, deliberately promulgated as established scientific *truth*, has rarely been witnessed.

4. In reference to the inquiry as to “whether we are to believe that there was originally *only one* centre of creation, or *more than one*, the Bishop remarks (p. 133, Part IV.) :—“There arises also the question, whether all mankind are descended from one pair, or whether there may not be different races, generically alike, brothers, therefore, of one great family, having all the same precious gifts, of speech and thought, reason and conscience, proper to humanity, but yet from the first differing as species :—so that it will be no longer necessary to believe that the Bushman, Australian savage, and Andaman Islander, are only degraded descendants of Adam or Noah, and that the European, Chinese, Negro, and North American Indian, are all

derived from one pair of ancestors; and it may be possible to assume a different parentage from ours, for those ancient makers of flint-implements, who lived, as scientific men assure us, many thousands—perhaps, tens of thousands—of years before the Scripture epoch of the Flood. Such questions as these must now be open questions; since we are no longer bound to believe in the historical infallibility of this composite record, which lies before us in the book of Genesis.” He then, in support of these views, refers to Prof. Agassiz: but why does he not quote Dr. Pritchard? * This eminent and laborious investigator, establishes irrefragably the very opposite conclusion, as Dr. Colenso well knows. “The sacred Scriptures,” says this distinguished philosopher, “whose testimony is received by all men of unclouded minds with implicit and reve-

* The Bishop does refer to this distinguished writer once; but in connection with a different inquiry—the Deluge. He says (p. 190, part IV.) “To assume with Pritchard a subsequent creation is unnecessary and quite inadmissible; for between the completed creation, and the history which begins from thence, stands the Divine Sabbath, which excludes that after-creation.” We cannot see that the reason here assigned for rejecting as “quite inadmissible” Dr. Pritchard’s view has any connection with the matter at all. Dr. Pritchard writes as one who believes in the story of the Flood—“whereby the world that then was being overflowed with water *perished* ;” and *consequently* that the face of the earth must have been *renewed*. He is not one of those of whom it was predicted “There shall come in the last days scoffers, saying—since the fathers fell asleep all things continue as they were from the beginning of the creation.”

“The *Divine Sabbath*,” as Dr. Colenso is pleased to regard it, must have been repeatedly violated in God’s dealings with the Israelites: and on one occasion (the double supply of manna) it was violated expressly in order that the *human Sabbath* might be preserved unbroken! (See p. 74.)

rential assent, declare that it pleased the Almighty Creator to make of one blood all the nations of the earth, and that all mankind are the offspring of common parents" (*Natural History of Man*, p. 5). The learned author, after adverting to opinions adverse to the scriptural declaration, then adds—"I shall not pretend that in my own mind, I regard the question now to be discussed as one of which the decision is a matter of indifference, either to religion or humanity. But the strict rule of scientific scrutiny exacts, according to modern philosophers, in matters of inductive reasoning, an exclusive homage. It requires that we should close our eyes against all presumptive and extrinsic evidence, and abstract our minds from all considerations not derived from the matters of fact which bear immediately on the question. The maxim we have to follow in such controversies is *fiat justitia ruat cælum*. In fact, what is actually true, it is always most desirable to know, whatever consequences may arise from its admission" (*ibid.* p. 7). The author then dwells upon the universally acknowledged fact that *hybrids do not propagate*: distinct species, as the horse and the ass, may unite, but their offspring never do. "Nothing is more evident than the fact that all the tribes both of the animal and vegetable worlds, are generally reproduced and perpetuated without becoming blended and mixed together. The law of nature decrees that creatures of every kind shall increase and multiply by propagating their own kind, and not any other. If we search the whole world we

shall probably find not one instance of an intermediate tribe produced between two distinct species, ascertained to be such. If such a thing were discovered, it would be a surprising anomaly" (p. 11). And he concludes—"It appears to be unquestionable that intermediate races of men exist and are propagated; and that no impediment whatever exists to the perpetuation of mankind when the most dissimilar varieties are blended together. We hence derive a conclusive proof, unless there be in the instance of human races an exception to the universally prevalent law of organized nature, that all the tribes of men are of one family" (p. 24).

The slave-holder has thus physical evidence in the breeding of creoles, the offspring of the white man and the negro, that the African black is of the same blood as the European white. If the union of the two races produce offspring which themselves breed, all the facts of natural history compel the conclusion that the two races are of one and the same original stock. This is the conclusion we should come to in every other department of natural history. However dissimilar two animals that paired might be, if their offspring propagated, we should infer, in conformity with Nature's general law, that the original parents were both of the same family, and could not possibly be of distinct species, or stocks. *Hybrid animals are universally sterile*: "the perpetuation of hybrids, whether of plants or animals, so as to produce new and intermediate tribes, is impossible" (p. 16). Dr. Pritchard closes his elaborate

researches thus: "We contemplate among all the diversified tribes who are endowed with reason and speech, the same internal feelings, appetencies, and aversions; the same inward convictions, the same sentiments of subjection to invisible powers, and, more or less fully developed, of accountableness or responsibility to unseen avengers of wrong, and agents of retributive justice, from whose tribunal men cannot even by death escape. We find everywhere the same susceptibility, though not always in the same degree of forwardness or ripeness of improvement, of admitting the cultivation of those universal endowments, of opening the eyes of the mind to the more clear and luminous views which Christianity unfolds, of becoming moulded to the institutions of religion and of civilised life: in a word, the same inward and mental nature is to be recognised in all the races of men. When we compare this fact with the observations which have been heretofore fully established as to the specific instincts, and separate psychical endowments of all the distinct tribes of sentient beings in the universe, we are entitled to draw confidently the conclusion, that all human races are of one species and one family." The reader will bear in mind that this is the conclusion of an authority of the highest value in reference to researches of this kind:—a conclusion arrived at by the strictest induction, from accurate and minute examination of a vast range of particulars:—the conclusion, in fact, of *science* properly so called, and not the baseless ima-

* Pritchard's *Natural History of Man*, vol. ii., p. 714.

ginings of a man who talks about what "it may be possible to assume." The Rev. B. W. Savile, quoting from Mr. Darwin, who says—"I should infer from analogy that probably all the organic beings which ever lived on this earth, have descended from some one primordial form into which life was first breathed by the Creator"—judiciously remarks:—"It is singular to observe the different phases which modern rationalism has undergone. If at one time it assumes mankind, with all animal and vegetable life, to have sprung from 'some one primordial form,' at another time it declares that Adam could not have been the parent of the whole human race."* It is proper to add here however, having introduced the above quotation from Darwin, that this distinguished naturalist goes on to say:—"But this inference is chiefly grounded on analogy, and it is immaterial whether or not it be accepted. The case is different with the members of each great class, as the vertebrata, the articulata, etc.; for here, as has just been remarked, we have, in the laws of homology, embryology, etc., distinct evidence that all have descended from a single parent."†

As to "those ancient makers of flint-implements," whom Dr. Colenso assumes to have been human makers, science has not succeeded in tracing the "implements" to their real fabricators; and the ablest investigators differ as to their character and origin. They are found in great abundance in the neighbourhood of Amiens.

* *Revelation and Science.* By the Rev. B. W. Savile, p. 209.

† Darwin's *Origin of Species*, p. 519.

and elsewhere, and have been sometimes carried away in basket-loads to repair the roads.*

Man has been defined, in three words, as "A tool-making animal"—merely *one*, and that the lowest of his *assumed distinctive* peculiarities, and then it is most illogically inferred that a tool-making animal must be man. But what evidence is there that the stone implements, even conceding that they are of pre-Adamite origin, are *tools*? Where are the constructions, or what trace is there of the mechanical operations which the use of tools imply—and which traces we should expect to present themselves in abundance where such myriads of tools are found? It is a gratuitous assumption to designate them *tools*: they may be rather *weapons*, either for defence, or for the capture of prey, or for both. They may be no more tools, than the spider's web is a tool. Moreover: does a flint implement, that we choose to call a hatchet, or a knife, *necessarily* imply a *human* fabricator? Could not any brute, with but half the constructive intelligence or instinct of the spider, the bee, or the beaver, and having the hands of a monkey, rub or chip a piece of stone to an edge, and form for himself one of these rude weapons, if such a weapon were necessary to his support, or to his defence from attack? Suppose the bee and the wasp had been pre-Adamite creatures, never reproduced; and that a fossil honeycomb, or the

* For a full discussion of the latest discoveries and speculations respecting the Abbeville flint-implements, see the *Anthropological Review*,—a publication which appears to regard the interests of natural science (independently of all extrinsic considerations) as its sole function.

fossil impression of a honeycomb, had been dug up: what would most likely have been the inference from so beautiful a specimen of geometrical mosaic-work? Should we not find it difficult to escape the conclusion that the human hand, tools of human fabrication, and even high intellectual skill and *science*, had all been employed in the construction of a fabric of such exquisite workmanship?

And as to fossil bones, however ancient the deposit in which they may be entombed; and however more closely they may resemble the human anatomy, than even the chimpanzee and gorilla, it would be a violation of all the principles of scientific induction for the philosopher who contemplates the carcass, to point to the thing and say:—"There's the creature into whose nostrils God breathed the breath of life, and *he* became a living SOUL."*

5. Upon Genesis ix., 13, "I do set my bow in the

* Very recently one or two of the stone implements adverted to above have been discovered with rude carvings or engravings upon them. The work must unquestionably have been executed by some creature having hands, and a certain amount of intelligence. If it could be clearly *proved* that the workmanship was pre-Adamite, it would be evidence sufficient that there once existed animals approaching nearer to man in bodily structure than the Ape, and perhaps nearer to him in intelligence than the Dog, or the Elephant. The actual discovery even of the skeleton of such a creature (still supposing him to have been pre-Adamite), would not in the least disturb the Scripture account of the subsequent creation of *Man*, who is sufficiently distinguished from "the brutes that perish," in that account itself. It is more than probable, however, that too high an antiquity is attributed to the implements alluded to: but for the speculations, for and against, the reader is referred to the *Anthropological Review*. We shall also enter more fully into this question of the antiquity of man in the sequel.

cloud, and it shall be for a token of a covenant between me and the earth," the Bishop comments thus: "The writer evidently intends to account in this way for the *first* appearance of the rainbow. This is the plain meaning of the language here used, which must be twisted to imply that, though the rainbow had often been *seen* before,—as it must have been, if there was rain and sunshine together before the Deluge,—it was then first, after the Deluge, made the sign of peace between God and man. The writer supposes it was then first set in the clouds after the Deluge."* (Part IV. p. 223.) It may be true that the rainbow "had often been seen *before*";—we think it extremely likely that it had often been seen before, but had it been seen *during* the Deluge? Noah had probably looked out for it, hopefully, on many a terrific day, in the course of that long and dreary period; and looked in vain for its gladdening indication. What must have been the emotions of himself and family when once again it had re-appeared! What must have been the feelings of Noah when, contemplating *then* the surpassing beauty of the long-absent emblem, God said to him—"This is the token of the covenant which I make between me and you and every living creature that is with you, for perpetual generations"! As if—pointing to the glorious object, He had said—*There* is a natural phenomenon: And as long as the laws

* There are places on the present earth on which no rain ever falls, namely, the Desert of Sahara, part of the coasts of Peru, and several other spots. And rain is a rare occurrence in Egypt; and whenever it does fall, the shower lasts but a few minutes.

of nature last, so long will the covenant I now make with you endure: Yea, "for perpetual generations."

The Bishop has truly said (and we wonder *he* should have recorded the fact)—"We must not forget that a rainbow may herald a tremendous *coming* storm, as well as illumine the dark cloud that has passed." Yes: and it may have heralded the coming tremendous storm of forty days and forty nights. Would not *such* a rainbow have ever after been a portentous sign,—a source of fearful apprehension and terror to Noah and his family, but for the comforting assurance which God had given them? And it was, in fact, this *foreboding* bow to which the attention of Noah and his family was more especially directed, as the token of the covenant: it was not the bow seen in the *departing* cloud, but that seen in the *approaching* cloud, that was the bow of the covenant: "It shall come to pass when I *bring* a cloud over the earth," &c. (Gen. ix., 14.) Addressing the rainbow, well may Campbell exclaim—

"When o'er the green undeluged earth
Heaven's covenant Thou did'st shine,
How came the world's grey fathers forth
To watch thy sacred sign!"

And it is no disgrace to the philosopher, even in our own day, when he looks upon the foreboding rainbow with the eye of modern science, to look upon it also, as Noah did,—as the bow of promise; as the visible "token of the covenant," established long ages ago, between God and man. *Science* may inform him that *there* are the rain drops which "herald a tremendous coming storm"; but it is *Faith* alone that can assure

him that, however tremendous it may be, "the waters shall no more become a flood to destroy all flesh;" and that—"While the earth remaineth, seed time and harvest, and cold and heat, and summer and winter, and day and night shall not cease."

6. But, as may be expected, Bishop Colenso's main scientific support is geology; the teachings of which, as well as those of the Bible, he perverts and misrepresents. He adopts the hypothesis, which men of science reject:—that light is an emanation from the sun (p. 100); and says:—"Geology teaches that, for countless ages before man lived upon the earth, the sun *beyond all doubt*, was the centre and source of light and heat to the earth, and to its living creatures of all kinds, whose eyes were formed, just exactly as they are now, to receive its rays,—as well as to the successive generations of plants, which grew in those primeval forests, to which are due the carboniferous formations."

This is, at least, a perfectly unequivocal and explicit utterance. We have italicised *three* words in it, in order that the reader may compare them, at a glance, with the three words italicised, by the author himself, in the following quotation, extracted from a little lower down on the same page (p. 102). "Scientific geologists maintain that, though there was, probably, a time when the temperature of the earth was more uniform than it is now, yet that this was not the case for long ages before the human period began; and further, that at *all* times the earth, with its vegetable

products, and living creatures of all kinds, has been, *to all appearance*, dependent upon the sun for light and heat, just exactly as now."

How can science teach, *beyond all doubt*, what scientific men teach to be only *to all appearance*, true?

7. In reference to the earth being "without form and void, desolation and emptiness," it is affirmed (p. 97, Part IV.) that "Geology proves irresistibly that no such a state of things immediately preceded the epoch fixed in the Bible for the creation of man." Geology neither proves, nor makes the attempt to prove, any such thing. And, notwithstanding the boldness of the assertion, we think no reader of it can be so weak as to imagine that any geologist would endorse the preposterous doctrine that, a week's intermission, or suspension of, the stream of life,—a single week's, or even a year's desolation and emptiness of the earth's surface, could be detected by any exploration of that surface whatever. And, for aught that the Bible states to the contrary, the "desolation and emptiness" need not have continued a single day. Look at the text itself:—there is not a word as to *how long* the earth remained "without form and void." It merely informs us of the shapeless and barren condition of our planet *immediately before* the creative acts of the six days commenced. The objector acknowledges this; and yet has the temerity to affirm that "Geology *proves irresistibly* that no such a state of things immediately preceded the epoch fixed in the Bible for the creation of Man"! There is not a geolo-

gist in the world who would assert that his science can enable him to discover whether the continuity of animal and vegetable existence on this earth has suffered interruption (though but for an hour) at any remote epoch whatever. Everybody knows that in geological speculations hours, and days, and weeks, and even individual years, are (relatively) infinitesimal portions of time too minute for geology to take any account of at all: the chronological units of its calendar are not days, and weeks, and years, but tens of centuries.

According to Dr. Colenso, "Geology teaches that ravenous creatures preyed upon their fellow-creatures, and lived upon *flesh*, in all ages of the world's past history, just exactly as they do now" (p. 108). But Geology teaches no such thing: it is incompetent to teach anything whatever, respecting either the animal or the vegetable kingdom, during that limited period of time which lies between the Bible-epoch of the Creation and that of the Deluge. And the Bishop will be utterly unable to point out to his readers *any* geological work in which the peculiarities of the earth's fauna and flora are accurately described at any remote epoch whatever, and which *also* as accurately describes the animal and vegetable peculiarities 1000 or even 2000 years *after* that epoch: for during such a comparatively brief interval as this, Geology makes no record of general terrestrial changes at any one period of its vast chronology.

But we tire of our distasteful task; which we close with a word or two of admonition to the reader.

Let him remember that the present controversy is not about matters of *science* merely. *Our* science, like that of our predecessors, may in many particulars, be wrong. It may, perhaps, be put right when we have passed away; and then whether it be right or wrong will be of not the slightest moment to us. But it is the truth of the BIBLE that is at stake. Should there indeed be, for each of us, an endless hereafter—a future eternity either of misery or of happiness, the Bible is the only monitor that can effectually warn us off the fatal shoals of the former, and guide us safely to the tranquil shores of the latter. It is the only chart, in our passage across this turbulent gulf of Time, which we have the power and the privilege to consult. The erasure, or change of but a single course in it may imperil the voyage. So obscured, and defaced, and altered, it may indeed yet *seem* fitted to direct us, smoothly enough, even till we fancy we can descry the hoped-for port. But if it should, thus vitiated, represent to be *terra-firma*, that which is but a quick-sand, or a fog-bank, the discovery of the error may be made too late; and we may be aroused to a sense of our perilous condition only by the appalling cry,—“Breakers a-head!”

NOTE 1.

In the foregoing Essay, we have taken no notice of Bishop Colenso's reproduction of Thomas Paine's Elohistic and Jehovistic theories; nor of the same

notorious writer's irreverent absurdities about the authorship of the Pentateuch—and about Moses recording his own death, etc.—all of which the Bishop has repeated, in substance, without the slightest acknowledgment of the source whence he has so largely drawn. “Take away”—says Paine—“take away from Genesis the belief that Moses was the author, on which only the strange belief that it is the word of God has stood, and there remains nothing of Genesis but an anonymous book of stories, fables, traditionary or invented absurdities, or of downright lies.”* Paine was abundantly refuted by Watson; and the refutation of Thomas Paine is also the refutation of Bishop Colenso. If the latter had profited as much from *The Apology for the Bible* of Watson, as he has profited, in a sad sense, from the *Age of Reason*, of

* To this specimen of the *Age of Reason*, the following is a pretty close parallel: Take away from the ancient book called *The Elements of Geometry*, the belief that Euclid was the author, and there remains nothing of the Elements of Geometry “but invented absurdities or of downright lies.” [It is proper to state that this parallel was employed in a book published in 1831, by John Thomas, intituled—*The Challenge of a Deist accepted*.] Some of the writings of Paine exhibit a degree of logical acumen greatly superior to that possessed by most of his disciples and admirers, including even the Bishop of Natal: but that the Divine authority of the Pentateuch must be rejected as soon as it is believed that Moses was not the only inspired penman who wrote it, is anything but a logical conclusion. The authenticity of the *Writings* is abundantly attested by a greater than Moses. Even could it be *proved* that not a single line of the Pentateuch was actually written by Moses, the proof would indeed affect the genuineness and authenticity of the *title-page*, but nothing more. The Books of *Euclid*, are *known* to have been not all written by Euclid himself; but they will be referred to, as such, to the end of time; and every human being will always know what the *writings* are which are thus designated.

Thomas Paine, his examination of the Pentateuch would, at least, have reflected no discredit on his character and calling. Those who wish to see the Bishop ably answered on the above-mentioned points, should read Watson's book, just alluded to; as also the Rev. Mr. Wickes's *Moses or the Zulu* and likewise *The Bible in the Workshop*. And in addition to these, the Rev. Daniel Moore's recent publication *On the Divine authority of the Pentateuch*, and an instructive Paper, by the same author, in *The Christian Observer* for May, 1861.

NOTE 2.

We have adverted at page 98 to Bishop Colenso's not unfrequent practice of tampering with the texts of the Bible, either by the suppression of those portions which would render his comments and inferences nugatory, or by the insertion of certain words, foreign to the Record, which are seen to be necessary to effect the purpose he has in view; the purpose, namely, of making the sacred narrative appear to be incredible and fabulous. He first fabricates absurdities, and forthwith sets about exposing them.

He devotes one of his chapters (Chap. vi.) to the discussion of the following text:—

“And the skin of the bullock, and all his flesh, with his head, and with his legs, and his inwards, and his dung, even the whole bullock, shall he [the Priest] carry forth without the camp, unto a clean place, where the ashes are poured out, and burn him on the wood

with fire. Where the ashes are poured out, there shall he be burnt." (Lev. iv. 11, 12.) The Bishop affirms this text to convey that "the refuse of these sacrifices would have had to be carried by the Priest *himself* (Aaron, Eleazar, or Ithamar,—there were no others,) a distance of three quarters of a mile. . . . In fact, we have to imagine the Priest *himself* to carry, *on his back on foot*, from St. Paul's to the outskirts of the Metropolis, the skin, and flesh, and head, and legs, and inwards, and dung, even the whole bullock." And the Bishop shews, of course, the impracticability of this amount of individual labour.*

But take from the scriptural directions what the Bishop has unwarrantably put in,—the words which we have here distinguished by italics; that is, remove the *gloss*, and you remove the difficulty. Everybody knows that it is the doctrine—not only of all our law-courts, but of common sense, that what a man directs to be done by his appointed agents, he does, virtually, himself: and this too is the declared doctrine of the Bible. Thus (Gen. xli., 48, 49): "And he [Joseph] gathered up all the food of the seven years, which were in the land of Egypt, and laid up the food in the

* By aid of his ubiquitous servant-of-all-work. *Arithmetic*, the Bishop makes the distance of portorage to be "a distance of six miles." These, with the other multifarious labours of the priesthood, are certainly very astounding; but they may be paralleled by modern facts, which are undoubtedly historical. Sir Christopher Wren, for instance, is affirmed to have built St. Paul's Cathedral and the Monument of London; a stupendous task for one man to have accomplished: yet the history of modern London records it, and people in general regard the statement as true.

cities: the food of the field, which was round about every city, laid he up in the same."

"And Joseph gathered corn as the sand of the sea, very much, until he left numbering: for it was without number." Now Joseph just as much did all this *himself* as did the Priest carry the bullock *himself*, or as did Sir C. Wren build St. Paul's *himself*; and Bishop Colenso, to be consistent, must admit that Joseph is here declared to have accomplished this herculean labour by *himself*; and as no mention is made, in either of the two cases, of subordinate agents acting by the direction and under the control of their official superior, we have no doubt that, in the latter of these cases, as in the former, the Bishop would aver the narrative to record this incredible feat; and that Joseph carried all the corn *himself*, "on his back"! But what can the Bishop say to the following most explicit statement?—

"And the keeper of the prison committed to Joseph's hand all the prisoners that were in the prison; and *whatsoever they did there he was the doer of it.*" (Gen. xxxix, 22.)

In defiance of all this, however, the Bishop insists that the duties of every office must all have been performed by the head official *himself*, without any subordinate assistance. According to him, the Priests were occupied, without a moment's intermission, in the most wearisome labours, during the whole of the twenty-four hours; having no time at their disposal for either eating or sleeping; and yet that (according to

him) they each managed to consume several hundred-weight of solid food per day!* (See chapters xx, xxi, Part I.) How amazing the credulity which *believes* that there ever could have existed any man, however vile as an imposter, who could pen such egregious absurdities in the *expectation* of being believed! As well might we suppose a person to record, as fact, that the letters, from the chief office in London, were all delivered (inland and foreign) by the Post-Master-General *personally*, and expect future ages to believe him. The Bishop—having sufficiently deseanted upon the enormous labour thus devolving upon the Priest personally, and the formidable obstacles to the preservation of cleanliness, in the vast encampment, which the people generally must have had to contend with—goes on to say,—“But how huge does this difficulty become, if, instead of taking the excessively cramped area of 1652 acres, less than *three square miles*, for such a camp as this, we take the more reasonable allowance of Scott, who says, ‘this encampment is computed to have formed a moveable city of *twelve miles square*.’ In that case the ofal of these sacrificees would have had to be carried by Aaron himself, or one of his sons, a distance of six miles; and the same difficulty would have attended each of the other transactions above-mentioned we have to imagine half a million of men going out daily—the 22,000 Levites for a distance of *six miles*—to the suburbs for the com-

* Exclusive of the poultry: “each priest,” says the Bishop (besides the more substantial food just named, “would have had to eat daily more than 88 pigeons for his own portion.” (P. 128.)

mon necessities of nature! The supposition involves, of course, an absurdity. But it is our duty to look plain facts in the face."

It is our duty too, to raise the veil, in which she is disguised, and look plain *fiction* in the face; and we here propose to shew what it is that the arithmetical garb, with which the Bishop has invested the present subject, really conceals. He forms his first arithmetical hypothesis on the consideration that "we cannot well allow for a *living* man, with room for his cooking, sleeping, and other necessities and conveniences of life, less than three or four times the space required for a *dead* one in his grave:" he thus takes three times 6 feet by 2 feet, the size of a coffin for a full-grown man, that is, 36 square feet for each person, and concludes,—and very reasonably, that this space being exclusively occupied by each person, would render the encampment one of great inconvenience. This hypothesis therefore (in so far as extent of ground is concerned) he very properly rejects; and assumes what he regards as "the more reasonable allowance of *twelve miles square*"—that is, of 144 square miles, for the whole area of the camping-ground; and thus deduces, for the 22,000 Levites, a distance of *six miles* to the suburbs for the common necessities of nature.

Now 144 square miles contain 4,014,489,600 square feet, which subdivided equally among 2,000,000 of people, gives a space of $2007\frac{1}{4}$ square feet to each person.

The great dining-saloon of the largest steam-ship.

ever built—(before the Great Eastern), the *Atlantic*, was 60 feet by 42, so that the area was 2520 square feet : three times this would be an area of 7560 square feet. We have just seen that if Bishop Colenso had had to mark out the camping-ground of the Israelites, he would have allotted to every *four* persons a space of $2007\frac{1}{4} \times 4 = 8029$ square feet, which considerably exceeds 7560 square feet, the measurement of *three* saloons, each equal in size to that of the *Atlantic* steamer. And this extent of space he affirms to be but a “reasonable allowanee” for a man and his wife and two children,—a space fully equal to the area of one of even the very largest of our London churches ! Yet without this lavish and preposterous allowanee of camping-room, what becomes of the Bishop’s “*six miles*,” and of the “huge diffieulty” of “the people having to carry out their rubbish, and bring in their daily supplies,” &c. ? “The supposition [*his supposition*, not the Scripture narrative] involves, of course, an absurdity.” A tenth part of his “reasonable allowance” would be space amply suffieient for every possible requirement,—suffieient for surrounding enclosures, securing family and domestic privacy—suffieient for interseeting roadways, and for all sanitary arrangements. The encampment was abundantly supplied (as the history tells us) with all needful vessels and utensils ; and the *warriors* only were commanded to repair without the camp, for the purpose of ensuring the greater cleanness within. The Bishop remarks that “there were the aged and infirm, women in

childbirth, sick persons, and young children, who could not have done this." He does not see that these would naturally be left to the care of the women, who would perform for the helpless all needful offices, and that they themselves—with the domestic accommodation just adverted to—would never have occasion to repair to the outskirts of the camp. No injunctions as to cleanliness were laid upon the *women*, simply because no such injunctions were necessary. Had any been needful, the injunction would, no doubt, have been an interdict :—they would have been *forbidden* to go outside the camp : but such a breach of decency and propriety being inconsistent with the characteristic modesty of civilized woman, any legal enactment to provide against it would have been superfluous and useless.

We have entered into these details for the purpose of clearly establishing, by the examination of a fair sample of his writings, the charge laid against the Bishop, at page 98 of misrepresenting and perverting the statements of Scripture. By some unaccountable fatalism, he seems to be impelled—no matter whether by fair means or foul—to *make*, not to *prove*, the Mosaic narrative to be ridiculous and absurd. Notice the way in which he plots out the ground for the encampment of the Israelites,—a way which could be adopted only for the purpose of covering the most extensive area, and of multiplying inconveniences to such a degree as to make the performance of the ordinary duties and necessities of life intolerably irksome. He separates husband from wife, and mother from daughter; isolates each

individual, and assigns a distinct dwelling to every member of the immense community. Each, for *himself*, is to have "room for his cooking, sleeping, and other necessities and conveniences of life"! Were such camp-arrangements ever heard of before? Yet these are the arrangements the Bishop requires us to accept in the very hypothesis with which he starts p. 38 (Part I.); and, of course, the absurdity of the hypothesis enters the conclusion. Seizing upon a mere slip of the pen of the Rev. Thomas Scott, the Bishop quotes that author in support of his own most exaggerated estimate of the extent of the encampment—"Scott says this encampment is computed to have formed a moveable city of *twelve miles square*." We have not the slightest doubt that Scott *meant twelve square miles*, a very different thing; for he was neither insane nor dishonest. What may be the condition of the Bishop of Natal we cannot do more than conjecture. We leave the reader himself to determine whether the writings we have here examined indicate mental or moral aberration,—whether the grave faults with which they are replete are to be laid to the charge of the head or of the heart—and whether the writer be not a fitter subject for Dr. Forbes Winslow than for Convocation.

Those who have read the promises which Bishop Colenso makes in the preface to his First Part, must be astonished to find, upon an examination of the work itself, how completely those promises have been broken; and how totally opposed to his own declared wishes the execution has proved to be. He says "I do not

wish to take the reader by surprise or to entrap him by guile. I wish him to go forward with his eyes open, and to watch carefully every step of the argument, with a full consciousness of the momentous results to which it leads, and with a determination to test *severely*, with all the power and skill he can bring to the work, but yet to test *honestly* and *fairly*, the truth of every inference which I have drawn, and every conclusion to which I have arrived." And this was written *after* the paralogisms, the perversions, the misrepresentations, and the glaring absurdities, in that First Part, had all been penned and printed! The *apparently* earnest declaration of honesty and fairness here made may certainly have induced some readers to receive his conclusions without scrutinizing the methods by which they have been reached; but the general invitation, "to test them *severely*," cannot, surely, have been given in the hope, or even in the expectation that it would be accepted. It is hard to believe that he can sincerely have *wished* any such thing.

The Bishop has undertaken a task to which—whether from mental or moral infirmity—he has proved himself to be wholly incompetent: the evidence he offers in support of the notion, which has somehow or other got into his head, that the Mosaic Story is unveracious, breaks down, the most signally, precisely in those parts of it which he appears, from his appeals "to modern science," to regard as the most invulnerable. Abundant evidence, but of a very different kind, the

work under notice does certainly furnish:—it is this: that, whether the Pentateuch be true or false, the Bishop of Natal is not the man to discuss the question either one way or the other. And believers in Revelation have reason to rejoice that he did not exercise his pen on their side.

But science, in whatever hands, will ever prove inadequate to deal with the direct acts of Deity in the material world. Physical science has to do solely and exclusively with events which arise from natural causes alone. It cannot tell anything as to the past, nor predict anything as to the future, in regard to occurrences brought about by supernatural power. These are not the objects of science. They must be received, —if received by man in his present condition at all, as articles of Faith. “When this mortal shall have put on immortality,” the case will be different:—

“WHAT I DO THOU KNOWEST NOT NOW, BUT THOU SHALT KNOW HEREAFTER.” (John xiii. 7.)

SECTION V.

ON THE AUTHORITY OF "PHYSICAL SCIENCE;" AND ON
SOME MODERN PERVERSIONS OF THE TERM.

IT is so common in the present day to regard the decisions of physical science as absolutely final, in reference to all controversies respecting whatever has taken place in the natural world, that it becomes a matter of some importance to ascertain the real claims to authority of what is thus considered to be an unerring tribunal, the justice of whose verdicts no one can reasonably question. What is declared to be adverse to modern science, is virtually declared to be, of necessity, adverse to truth; and is therefore to be rejected as utterly fabulous. But the wisdom of such summary rejection, in every case of this kind, becomes very questionable when we reflect that much that was modern science at one time, is equally rejected by what is modern science now; and that very possibly the science of our successors may doom much which enters that of the present day to a similar fate.

In its *strict* meaning, the term Physical Science is comprehensive of only what we really *know* respecting the external world, to the exclusion of everything that we merely *suppose*. Its range is limited to that of

actual observation and experiment; and to such deductions from these, as to physical causes, as we *know* to be the true originators of the several phenomena. But in reference to these latter—the determination of physical causes, this limitation of meaning in the term “Science,” is very often transgressed; and speculation and conjecture, as to what *may* be, allowed to occupy the place of unattainable certainty, as to what actually is, or *must* be.

It is more especially in this hypothetical portion of science, as indeed might be expected, that changes are from time to time introduced as knowledge advances; and it is the necessity for these changes that so often renders the science of one age obsolete and worthless in that which immediately succeeds, even though the new facts, gathered from more extended observation, may be comparatively but few and unimportant.

If all that goes by the name of physical science were so much unquestionable truth, so far as its affirmed revelations reach, then our progress from time to time would be actual additions to treasures already accumulated: every new acquisition would be so much *added*; but nothing would be subducted from the stock in hand.

And in what is purely observational, such is indeed the case: all that the senses have unmistakeably witnessed, or that actual experiment has unmistakeably disclosed, and which has been faithfully recorded, takes a permanent place in the annals of science, as established truths which no future investigations can dis-

turb; for they rest upon evidence of the most conclusive kind—the evidence of the senses.

The accumulated knowledge of Nature's phenomena thus obtained, and the confidence we have—a confidence justified by all past experience—that the same phenomena will always recur under the same antecedent circumstances, furnish the materials, and stimulate the activity and inventive ingenuity of man in the application of them, in all those contrivances and constructions which are such inestimable boons to civilised life, and which confer such permanent benefits upon all social communities.

Materials which nature has placed apart, and separated by wide intervals, man's activity has brought into conjunction; and his ingenuity and skill have so combined them that the distinct properties of each thus blended, and operating in concert, give rise to phenomena often but little anticipated; and never such as nature alone would have spontaneously exhibited. Hence the sciences of chemistry, electricity, magnetism, etc., and all the important practical results which have flowed from them. On the other hand, what nature presents in a composite form, man decomposes; and, here too, often arrives at new and unexpected phenomena. The experimental labours of the early alchemists, though quite abortive as to the objects of their search, resulted in many unlooked for and valuable chemical truths.

The decomposition of light, once thought to be homogeneous, displays, in the gorgeous colours of the prismatic spectrum, a beautiful instance of distinct phe-

nomena, all hidden, as it were, in the compound material.

In the former class of cases, human power may be said actually to add to the phenomena of nature: in the latter class, it unfolds, liberates, and renders cognisant by our senses what, but for the exercise of mind upon matter, would have ever remained concealed, and therefore unknown. But in both classes of cases the spontaneity of the operations of material nature is interfered with: what is totally distinct from material nature has entered its territory, and there exercised a coercive authority over its subjects, disturbing their repose and rousing them, as it were, to the putting forth of those dormant energies with which they have been ever endowed.

There are regions, however, secured by impassable barriers from all inroads of this kind:—remote and extensive domains where nature rules with undisturbed sway; and in reference to which man can only stand aloof, in the humble attitude of a powerless spectator. The phenomena of the heavens are utterly beyond his control: he can neither hasten nor retard them. But he can observe them; and thus, in time, discover the laws implied in their uniform order of succession, and in their regularly recurring cycles. And, for all his practical purposes here, this is enough. It would certainly gratify an enlightened curiosity to attain to further information respecting the character of those far-off bodies whose shapes and movements only we can contemplate:—to learn, for instance, how it is

that the great source of heat above us remains unexhausted—how its fuel is supplied, and whence it is derived; to discover by what creatures, if by any, the planets are inhabited, and with what kind of vegetation the surfaces of those planets are clothed, what minerals repose beneath, and what aerial beings fly above. But since these, and many other particulars, lie beyond the sphere of observation, science knows nothing about them, and therefore has nothing to communicate respecting them. Conjecture and imagination may people these worlds as they please:—anything may be supposed, where nothing is known.

Physical science can speak with authority only in reference to what is actually seen or heard—measured or weighed:—in fact, only as to so much of nature as addresses itself to our senses,—in other words, observed phenomena. It is not however the mere noting of these, as so many distinct and isolated appearances, that constitutes the business of physical science; for in this exercise alone science can be scarcely said to come into play at all. Its more especial office is to discover, of every phenomenon,—first, what is its invariable antecedent; and then to trace the more remote antecedent of *that*; and so on: and the connecting links of the series being thus determined, to discover, finally, from what permanent principle, or law of nature, the entire group is the necessary consequence; or, at least, to what such general principle the phenomena *may be* referred as their physical cause:—in fact, to find out what the primitive physical agency actually is that

originates the several phenomena we observe, or, at all events, what agency, whether unquestionably that of nature or not, is competent to evoke those phenomena:—adequate to the work actually performed. If this knowledge be attained—if we arrive at the real source of the phenomena in question, or only at a general principle adequate to account for all the observed facts, then, by investigating the potentialities of that prime agent, and, by reasoning, deducing from them the results they would give in cases not originally contemplated, we may become able even to anticipate phenomena additional to those already observed.

It is as if certain geometrical properties being made known to us, we were to proceed to search out the figure to which those properties belong: if we succeed, then a direct study of that figure may bring to light many other properties in addition. And, indeed, there is a good deal of analogy between the two problems, namely—1. Given a certain number of phenomena, all affirmed to be the offspring of some one primary physical cause, to discover that cause; and—2. Given a certain number of geometrical properties, all residing in the same figure, to discover that figure. In the solution of each there is hazard of a wrong determination: in geometry figures very unlike each other have nevertheless certain properties in common—the ellipse and hyperbola, for instance; and so in physics; causes very different may each be assigned which equally suffice to account for the same limited series of phenomena. Witness the two distinct hypothesis

which equally explain the more ordinary phenomena of light.

But the physical cause which philosophers are thus led to assign for any class of natural phenomena is always regarded by them as only provisional; for however satisfactorily it may account for whatever has been observed, yet phenomena thereafter noticed, and clearly referrible to the same *real* cause, may fail to be explicable by the hypothetical one previously assigned; in which case the hypothesis must be modified so as to include the new facts, or else rejected altogether. And thus there is always more or less of uncertainty as to the real existence in nature of what we often assume to be the physical causes of phenomena; or as to whether our hypothetical cause is comprehensive of *all* the phenomena, in any case, or is only a portion, as it were, of a whole—a part—cause. One of the most comprehensive and least doubtful of hypothetical causes is that which is designated *the law of gravitation*; yet see with what truly scientific caution Sir John Herschel speaks even of that.

“There is one feature in physical astronomy which renders it remarkable among the sciences, and has been the chief, if not the only, source of the perfection it has attained. It is this—that the fundamental law embracing all the minutiae of the phenomena so far as we know them, presents itself at once, on the consideration of broad features and general facts, deduced by observations even of a rude and imperfect kind, in such a form as to require no modification, extension,

or addition when applied in minute detail. In other sciences, when an induction of a moderate extent has led us to the knowledge of a law which we conceive to be general, the further progress of our inquiries frequently obliges us either to limit its extent or modify its expression. To those who are familiar with the history of chemistry, instances of this will present themselves at every turn. In physical optics, the general representation of all the series of polarised tints and the colours of natural bodies by a certain universal scale—the Cartesian law of refraction when applied to the extraordinary ray in crystalized media, and even to the ordinary, if the reports of some recent experiments are to be relied on—together with innumerable other laws, simple, natural, and resting on extensive inductions; have all been either overset, extended, or materially modified by the progress of the science.

“In physical astronomy, however, when taken in that limited acceptation, which restricts it to the explanation of the planetary motions, our first conclusion is our last. The law on which all its phenomena depend, flows naturally and easily from the simplest among them, as presented by the rudest observation; and, in point of fact, such has really been the order of investigation in this science. The rude supposition of the uniform revolution of the moon in a circle about the earth as a centre, led Newton at once to the true law of gravity, as extending from the earth to its companion. The uniform circular motions of the planets about the sun, in times following the progression assigned by observation in Kepler’s rule, confirmed

the law, and extended its influence to the boundaries of our system. Every thing more refined than this—the elliptic motions of the planets and the satellites—their mutual perturbations—the slow changes of their orbits and motions, denominated secular variations—the deviation of their figures from the spherical form—the oscillatory motions of their axes, which produce nutation and the precession of the equinoxes—the theory of the tides, both of the ocean and the atmosphere, have all in succession been so many trials for life and death in which this law has been, as it were, pitted against nature; trials whose event no human foresight could predict, and where it was impossible even to conjecture what modifications it might be found to need. Even at this moment, if among the innumerable inequalities of the lunar or planetary motions, any one, however small, should be discovered decidedly not explicable on the hypothesis of a force varying as the inverse square of the distance, that hypothesis must be modified till it accounts for it.” He remarks however that “It is hardly necessary to add, that in the present state of science this is a case not to be contemplated.” But, lest the influence of this great law should be gratuitously assumed to extend beyond the sphere of actual observation, he further adds “The cautious philosopher however will still regard it as worthy inquiry, whether, at enormous distances, like those of the fixed stars, or at such comparatively microscopic intervals as those we are ordinarily conversant with on the surface of our planet, the rigorous law of a force as the inverse square of the distance

may not suffer some modification. . . . The subsistence of sidereal clusters, in which the compression or crowding of the stars is carried to the extent we have instances of in many parts of the heavens, seems hardly compatible with a gravitating force, unopposed by some principle of conservation, unless we suppose them in a state rapidly verging to a catastrophe. On the other hand, with regard to small distances, we have no distinct proof, that within a few inches, or even miles, from a material point, the law of gravity may not begin to deviate appreciably from the Newtonian law." *

We have made these quotations, from so high an authority, in order that the general reader may see that the physical laws which science propounds for the explanation of phenomena—not excepting even the law of gravitation,—are but provisional. So long as observed phenomena are strictly compatible with the law assigned to account for them, that law, be it right or wrong, maintains its place in science; but it has no claim to any authority beyond the limits of the phenomena which have been proved to be explicable by it. And *within* these limits it is of no consequence whether the imagined law be really that of nature or not; but every phenomenon, new to observation, puts it to the test; places it, as expressed above, on its "trial for life or death;" and although an unfavourable verdict seals its doom, yet a favourable one merely prolongs its life, till another witness is produced; when it has to pass through a similar ordeal. And even when phenomenon after phenomenon are all brought under

* *Physical Astronomy*: Ency. Met., p. 647-8.

the dominion of the assigned law, all that we can in strictness say is that the appearances are such as they would be *if that* were a law of nature : thus : in the case of the law of gravitation, we are rigorously justified only in saying that all the phenomena of the solar system take place as *if* matter acted upon matter according to the Newtonian law of attraction. And this statement being true, it is really of no consequence to astronomical science whether matter does really so act upon matter or not. The laws of *phenomena*, however, apart from all consideration of ultimate physical causes, are unmistakeably real laws of nature ; and in certain cases the very idea of a physical cause (or even of a physical effect), is seldom or never entertained. It is a law of nature, for instance, that the sun, and every planet of the solar system—in so far as the known members of it are concerned—rotates on an axis ; they all rotate moreover in the same direction, they all revolve round the sun in the same direction, and, up to the planet Uranus, the distances at which the planets are placed from the sun are in accordance with an ascertained numerical law.

There is undeviating law (to the extent, at least, to which observation has reached), even in such apparently insignificant things as the shell of a snail, and the climbing tendril of a common scarlet bean. The spiral turns of the shell always proceed in the same uniform direction ; and in the spiral course of the bean-stalk, up the rod round which it twines, the turns are always as invariably in the same direction as are the turns of every cork-screw. A sufficient reason can be assigned

for giving the same uniform direction to the spiral turns of every cork-screw, but none for the like invariability of direction in the twining bean-stalks.

The former class of observed phenomena are not any of them traceable to a *physical* cause; and although there is doubtless some hidden determining cause for the latter, yet that cause cannot be one of physical necessity, in reference to the final results brought about. Of the former phenomena science cannot assign any physical *cause*:—of the latter it cannot discover any physical *effect*.* Laplace indeed conjectured a physical cause for the rotatory and orbital motions of the planets in the same direction, and of the satellites of these also in the same direction, on what has been called *the nebular hypothesis*. He imagined that the planets were thrown off the rotating sun, then in a molten or nebulous condition, and that the satellites were in like manner thrown off their still molten primaries; and that thus uniformity of direction was the physical consequence; but since he propounded this hypothesis,—which he did, be it remembered, with all becoming hesitation and humility, offering it, to use his own words, “with that distrust which everything ought to inspire that is not the result of observation or calcula-

* The ultimate purpose of the bean-stalk—the bearing of the flower and the fruit—would surely be accomplished in whichever direction the spirals turned. The determining principle, whatever it be, can therefore be referred only to the arbitrary will of the Creator, and not to any physical necessity in regard to the results educed. Whatever it be that causes invariability of direction, that invariability is no *necessary* antecedent of what follows.

tion,"—we say since this hypothesis was proposed, it has been found that the satellites of Uranus violate its conditions: they move in a direction the very opposite to that which the hypothesis demands; and this fact alone is sufficient to prove that the motions of the other component parts of our system are not such as they are of physical necessity.

The distinction should never be overlooked between the laws which phenomena themselves naturally present to our observation, and about which there can be no mistake, and the laws of causation which science propounds to account for what is thus observed. These, unlike the former, are not necessarily laws of nature at all; though, until further discovery in the fields of observation and experiment proves their fallacy, they may be safely regarded as such. Science cannot vouch for the truth of any of its hypotheses of physical causation: phenomena that may be satisfactorily explicable by referring to such an hypothesis—which hypothesis therefore answers all the demands of science—may in reality be produced by a cause which is not physical at all. And, in fact, even in the so-called physical causes which science adopts—we mean of course those ultimate physical causes which have no physical antecedent—there is always something immaterial or spiritual implied. The greater part of the phenomena of nature are all referred, ultimately, to the action of *force*; and are thus brought within the dominion of mathematical investigation. But what is *force* in itself? "How far we may ever be

enabled to attain a knowledge of the ultimate and inward processes of nature in the production of phenomena, we have no means of knowing; but, to judge from the degree of obscurity which hangs about the only case in which we feel within ourselves a *direct* power to produce any one, there seems no great hope of penetrating so far. The case alluded to is the production of motion by the exertion of force. We are conscious of a power to move our limbs, and by their intervention, other bodies; and that this effect is the result of a certain inexplicable process which we are aware of, but can no way describe in words, by which we exert *force*. And even when such exertion produces no visible effect (as when we press our two hands violently, together so as just to oppose each other's effort) we still perceive, by the fatigue and exhaustion, and by the impossibility of maintaining the effort long, that something is going on within us, of which mind is the agent, and the will the determining cause. This impression we receive of the nature of force, from our own effort and our sense of fatigue, is quite different from that which we obtain of it from seeing the effect of force exerted by others in producing *motion*. Were there no such thing as motion, had we been from infancy shut up in a dark dungeon, and every limb encrusted with plaster, this internal consciousness would give us a complete idea of *force*; but when set at liberty, habit alone would enable us to recognise its exertion by its *signal*, motion, and *that* only by finding that the same action of mind which in our confined

state enables us to fatigue and exhaust ourselves by the tension of our muscles, puts it in our power, when at liberty, to move ourselves and other bodies. But how obscure is our knowledge of the process going on within us in the exercise of this important privilege, in virtue of which alone we act as direct *causes*, we may judge from this, that when we put any limb in motion, the seat of the exertion seems to us to be *in* the limb, whereas it is demonstrably no such thing, but either in the brain or in the spinal marrow; the proof of which is, that if a little fibre, called a nerve, which forms a communication between the limb and the brain, or spine, be divided in any part of its course, however we may make the effort, the limb will not move.

“This one instance of the obscurity which hangs about the only act of direct *causation* of which we have an immediate consciousness, will suffice to shew how little prospect there is that, in our investigation of nature, we shall ever be able to arrive at a knowledge of ultimate causes, and will teach us to limit our views to that of *laws*, and to the analysis of complex phenomena by which they are resolved into simpler ones, which, appearing to us incapable of further analysis, we must consent to regard as causes. Nor let any one complain of this as a limitation of his faculties. We have here ample room and verge enough for the full exercise of all the powers we possess; and besides, it does so happen, that we are actually able to trace up a very large portion of the phenomena of the

universe to this one *cause*, viz., the exertion of mechanical *force*; indeed, so large a portion, that it has been made matter of speculation whether this is not the only one that is capable of acting on material beings.”*

It thus appears that when we assign an ultimate physical cause for any particular group of phenomena, we do no more than announce a physical principle or agency from the action of which those phenomena *would* proceed : this active principle therefore is simply an expression of the law of the phenomena ; the conditions implied in it being those to which the phenomena are all observed to conform. And such a principle is a law of nature only in the sense in which, and to the extent in which, it serves to account for natural appearances. We can be certain that the cause assigned is the true cause only when we are certain that no other cause can produce the effects ; that is to say, no other cause compatible with what we already know : we *are* certain however that our hypothetical cause expresses the real law of the phenomena it suffices to account for, inasmuch as it *does* suffice to account for them.

* Herschel's *Discourse on the Study of Natural Philosophy*, pp. 86-88.

In addition to the foregoing remarks, we may observe that even muscular force is continuously in exercise, within ourselves, quite independent of volition, and unconnected with all effort on our part ; as, for instance, the muscular contraction and dilatation of the heart ; and the corresponding muscular movements in the act of breathing. So also the contraction and dilatation of the pupil of the eye ; these actions are entirely involuntary : the latter are evidently caused by the operation of the light itself ; but *how* caused we cannot tell : the apparently mechanical force, thus exercised by light, is as marvellous as the mechanism on which it acts,

The recent discovery of the planet Neptune—or rather the *way* in which it was discovered, greatly strengthens the conviction that the law of gravitation is really that of nature in the strictest and most comprehensive sense, as regards the system of which this earth forms a part; that the matter of that system is really endowed with the property of attraction which the Newtonian law assigns to it. Previously to that discovery, the perturbations of Uranus, when accounted for in conformity with this law, as far as they could be accounted for, still left *residual phenomena* unaccounted for. Calculation shewed that these also would become explicable on the hypothesis of the existence of a force of a certain amount, external to the orbit of Uranus, and acting from an assigned direction at an assigned epoch, and in this direction, and at this prescribed time, a new planet was actually discovered: from the existence of the force the existence of the matter was inferred; and the inference was justified by the actual discovery of that matter in the indicated situation.

But if no such discovery had been made, yet science would have accepted the hypothetical cause as a satisfactory explanation of the outstanding phenomena; and physical astronomy would ever after have referred those phenomena to an invisible planet, without vouching unhesitatingly for its actual existence. It would be regarded as sufficient for the purpose if the hypothetical cause really accounted for the appearances. We should know that an assignable material mass, revolving in an assignable orbit beyond that of Uranus, *would be com-*

petent to produce the observed appearances ; provided only that that matter, like all the other matter in our system, obeyed the same physical law of *force*.

But the force which we thus attribute to the matter with which we are surrounded, cannot be conceived to be the result of volition, or of exertion, in the matter itself. It is doubtless something distinct from, and superadded to, those visible and tangible properties essential to the existence of matter. Let but these remain, and though gravitation were to be abstracted, matter, strictly so called, would still subsist. Gravitation therefore is not necessary to the existence of matter ; much less is a certain definite amount of this force a necessary accompaniment of a certain definite quantity of matter. For aught we can tell, matter may exist beyond the boundaries of our system endued with this power in a far inferior degree, or even not endued with it at all.

What the power itself really is, and how it comes to be connected with the matter around us, are questions that physical science cannot answer. We observe certain effects, the results of some common cause which is hidden from our senses ; and all that science can do, is to discover some general principle, or law, to which those effects may all be referred, as to a real cause ; and nothing more can reasonably be demanded of it. "The agents employed by nature to act on material structures are invisible, and only to be traced by the effects they produce. Heat dilates matter with an irresistible force, but what heat *is* remains yet a problem.

A current of electricity passing along a wire moves a magnetized needle at a distance; but, except from this effect, we perceive no difference between the condition of the wire when it conveys and when it does not convey the stream; and we apply the terms current, or stream, to the electricity, only because in some of its relations it reminds us of something we have observed in a stream of air or water. In like manner, we see that the moon circulates about the earth; and because we believe it to be a solid mass, and have never seen one solid substance revolve round another within our reach to handle and examine unless retained by a force, or united by a tie, we conclude that there *is* a force, and a mode of connection, between the moon and the earth; though what that mode can be we have no conception, nor can imagine *how* such a force can be exerted at a distance, and with empty space, or at most an invisible fluid, between.”*

And Newton himself was ever careful to abstain from dogmatising respecting this “mode of connection between the moon and the earth.” At the end of the 11th section of the *Principia* he says:—“I employ the word attraction here, generally, for any tendency of bodies to approach each other; whether this tendency arises from the action of bodies, either mutually seeking each other, or acting upon each other by spirits emitted, or whether it arises from the action of æther, or air, or any medium whatsoever, corporeal or incorporeal, impelling, in any manner amongst themselves,

* Herschel's *Discourse*, p. 193.

the bodies swimming in it. In the same general sense I take the word impulse; considering, in this treatise, not the kind of forces and physical qualities, but mathematical quantities and proportions."

And again, in his *Opticks*, he says,—“What I call attraction may be performed by *impulse*, or by some other means unknown to me. I use that word here to signify only in general any force by which bodies tend towards one another whatever be the cause.”

It is thus plain that Newton did not profess to have any knowledge of the real source of the force which he called attraction or gravitation. He found that *a* force, however generated, acting according to a certain invariable law which he assigned to it, was competent to account for what was actually observed; and this was all that science required;—all that was necessary to express the various circumstances, connections, and dependencies of the phenomena by “mathematical quantities and proportions.”

In like manner, Newton's illustrious successor:—“Is this principle,” says Laplace, “a primordial law of nature? Or is it a general effect of an unknown cause? Here we are stopped by our ignorance of the nature of the intimate properties of matter, and deprived of every hope of answering this question in a satisfactory manner.”—(*System of the World*, Book IV. chap. xv.)

If a railway train were observed to be proceeding at a uniformly accelerated rate, or indeed at any rate admitting of being expressed in algebraic terms, we

could calculate its velocity at any instant, and, knowing the mass moved, its momentum at any instant, without any inquiry as to whether the engine were before or behind—whether the train was pulled along or pushed along; or, in fact, whether, without any engine at all, it moved in virtue of some hidden force the mode of action of which we were entirely ignorant of. And notwithstanding this ignorance, yet, for the purpose of embodying the circumstances of the motion in a mathematical formula, we should be at liberty to regard the force as either tractile or propelling, only taking care to give it an intensity suited to the observed effects. Newton's force of attraction is to be viewed in a similar light.

Enough we think has now been said to enable the general reader to perceive what the province of physical science really is, and what, in nature, lies beyond its reach;—that its business is—not to penetrate the hidden mysteries of physical causation, but to investigate the laws of the phenomena caused, though we may not know how caused; to discover general principles to which, nevertheless, those phenomena may be referred, and of which they really are the development. Such a general principle or law, if it only embrace *all* the phenomena, does everything that science undertakes to accomplish. And if it were even revealed to us that all the phenomena, comprehended in what is called the physical law of attraction or gravitation, are in reality due to the immediate operation of Divine agency, still that law would be our suf-

ficient guide to the prediction of every astronomical event that can take place in the solar system ; so long, at least, as that agency operated with invariable intensity ; and, therefore, the law in question would still be retained in science. Seeing then the obscurity in which science finds itself involved when attempting to go beyond mere phenomena, and to penetrate into the secrets of nature's laboratory—passing from the examination of *what* she does to the inquiry as to *how* she does it, and seeking from observed effects to discover the unobserved ultimate causes :—we say, seeing this, in reference to the existing material world, is it not rash and unphilosophical in the extreme to dogmatise on these things in reference to the world that has passed away ? What can science possibly know of the physical forces in operation in the pre-Adamite earth, before the present creation came into being :—what as to the *intensity* of certain of those forces, supposing even that they were all precisely similar in character and office to those in operation now ?

And even in the post-Adamite earth, who can say what modification particular physical agencies may have undergone in consequence of the FALL :—what changes were comprehended in the curse pronounced upon the earth after that event ? To the earth alone that curse exclusively applied ; and we may therefore conclude that these changes were of a chemical, and not of a mechanical nature. We are expressly told that new productions (thorns and thistles) made their appearance ; and that the old productions were thence-

forth to be produced in a different way: not, as before, spontaneously, without man's labour and cultivation, but that human toil was painfully, and slowly, and imperfectly, to replace what had been withdrawn of *natural* stimulating force, in the vegetable world.*

But a person may say—"I do not believe in this story of the Fall, and the consequent deterioration of nature's powers." To such a person we have no remark to make: he simply announces the state of his own mind, his individual feeling in reference to a certain thing; with which state of feeling no one else has any direct concern. Such a statement invites no controversy, for it offers no challenge. It is a very different matter where a person, not content with announcing the mere fact of his own individual belief or unbelief respecting a proposition, ventures publicly to affirm that proposition to be untrue. The truth or fallacy of the thing itself may be matter of concern with everybody, though what he himself thinks about it may interest no other human being; and it is incumbent upon the objector to establish his asser-

* "Everything injurious to man in the organic, vegetable, and animal creation, is the effect of the curse pronounced upon the earth for Adam's sin, however little we may be able to explain the manner in which the curse was carried into effect; since our view of the causal connection between sin and evil even in human life is very imperfect; and the connection between spirit and matter in nature generally is altogether unknown."—*Commentary on the Old Testament*. By C. F. Keil (Clark's Theological Library, p. 105.)

We may notice here that *dressing* and *tilling* the garden of Eden must have implied agreeable and easy operations; widely different from those laborious ones which became necessary after the Fall; before which event man "ate bread," indeed; but not "by the sweat of his face."

tion—to prove his negative. The reader of the present volume will greatly misapprehend its intention, in reference to its bearing upon what the Bible reveals, if he thinks it aims at anything beyond shewing the inconclusiveness of such negative proofs, or rather the utter fallacy of what is put forward as such in recent publications. In joining issue with the positions advanced in these publications, anything more than this, on the part of those who undertake to controvert them, would be quite gratuitous, and beside the occasion. To prove affirmatively the veracity of the Bible, is a task of a totally different kind: no one would think of accomplishing this task by the aid of physical science: the veracity follows, of necessity, upon proof of the authenticity; and the inquiry into *this* is an inquiry altogether apart from *physical* investigation. But the publications referred to put aside all evidence of authenticity, treating the Bible as if none existed; and undertake to prove its statements to be untrue by an appeal to physical science. What physical science has to offer in disproof of the Fall and its alleged physical consequences, has been already adduced and disposed of. (Page 99.)

It has been sufficiently seen, from what is stated above, that the doctrines of science, as to ultimate physical causes, even as respects the existing order of nature, are of no authority whatever, other than in the sense that they suffice to express the laws of the existing phenomena, let these proceed from whatever actual causes they may.

But these hypothetical causes, thus explaining all the phenomena of present nature, and satisfying all the demands of modern science, may not be applicable, even as hypotheses, to the phenomena of a phase of nature that has passed away. Such application can be made only on the *assumption* that all terrestrial and atmospheric agencies then, were precisely the same in character and intensity, as at present ;—an *additional* hypothesis, the truth of which we have no means of testing. Natural processes, which are very slow now, may have been very rapid then, or the contrary ; and agents, in certain of those processes then, may have no existence now. Science cannot supply any information in reference to these matters ; and Revelation is silent, except, indeed, as to the fact that the duration of human life was very different in the primitive ages of mankind from what it is at present. We infer therefore

1. That science cannot reach the ultimate physical causes of *existing* natural phenomena.

2. That science cannot determine whether or not these *present* causes, whatever they be, are the same as those which were in operation during the pre-Adamite ages, or, if the same in kind, whether or not they have been always the same in intensity.

Nor must it be overlooked that, much as is said about the permanency and invariability of the laws of nature, there are many of her operations subject to no laws that man has yet discovered, or that he is likely ever to discover. Such, for instance, are atmospheric

and volcanic phenomena. No one can tell whether it will rain or not this day week ; when the next thunder-clap will be heard ; or even the point from which the wind will blow at a specified hour to-morrow. No one can tell when the next eruption of Vesuvius will take place, or the next earthquake in South America. It is easy to refer these impressive phenomena to "volcanic agency"; but it would be hard to define, clearly and satisfactorily, what that term means ; and harder still to assign to the agency, whatever it be, any *law* of action. Not only can we never predict the occurrence till the premonitory symptoms actually appear, but even when these do appear, we can infer nothing, from past experience, as to the intensity of the operating causes, the magnitude of the impending catastrophe, or the extent of the threatened devastation.

Speculative geologists, however, in constructing their theories, take for granted, as a truth not to be questioned, that terrestrial and atmospheric agencies were all exactly the same during the pre-Adamite ages as now. And yet, notwithstanding this general assumption, they do not hesitate to replace it by an opposing assumption, whenever indications present themselves, in the course of their researches, apparently inconsistent with it. Thus : at the remotest period to which their speculations reach, the earth was so intensely hot as to have become a molten mass : then, after the lapse of an enormous period of time, it became as intensely cold ;—changing from a state of liquid fusion to a state (superficially) of solid ice : then, after the lapse of another

enormous period of time, becoming warm again; the ice disappearing as mysteriously as it came. But if all this be admitted, then it must also be admitted that nature's agencies must have been very different then from what they are now. Yet, for other purposes of the geological theories, these agencies are assumed to have been precisely the same.

This tendency to the assumption of arbitrary hypotheses—more especially in the subjects of geology and natural history—prevails to a great extent in the present day; and theories having no foundation but in the imaginations of those who frame them, have been promulgated to account for what the Bible accounts for in a very different, and in a far more satisfactory way: for these wild and extravagant theories, even if assented to, utterly fail in their purpose after all. They have been broached, however, by men of confessedly high scientific reputation, and thus demand all the more attention. But men of science sometimes indulge the vagaries of fancy as well as other people;—first forming theories in their imagination, and then, availing themselves of the acknowledged obscurity in which ultimate physical causation is enveloped, set about inventing expedients—no matter how romantic—to justify these pre-conceived notions:—the very procedure that genuine science condemns. *Its* doctrine is to observe and collect facts first, and to frame theories to account for them afterwards. And it is to be regretted that books, in many respects valuable, should

thus be often made the common depositories of both scientific truth and scientific fiction.

The eminent naturalist, Mr. Charles Darwin, in his work *On the Origin of Species*, has thus mixed fact and fancy together: He says, "I cannot doubt that the theory of descent with modification embraces all the members of the same class. I believe that animals have descended from at most four or five progenitors, and plants from an equal or lesser number. Analogy would lead me one step farther, namely, to the belief that all animals and plants have descended from some one prototype On the principle of natural selection with divergence of character, it does not seem incredible that, from some low and intermediate form, both animals and plants may have been developed; and if we admit this, we must admit that all organic beings which have ever lived on this earth may have descended from some one primordial form. But this inference is chiefly grounded on analogy, and it is immaterial whether or not it be accepted. The case is different with the members of each great class, as the vertebrata, the articulata, etc., for here, as has just been remarked, we have in the laws of homology and embryology, etc., distinct evidence that all have descended from a single parent."*

The author's meaning, in reference to progressive development of structures and natural selection, may, *perhaps*, be gathered from the following passage:—

* *The Origin of Species by Natural Selection*, pp. 518, 519.

"Organs now of trifling importance have probably in some cases been of high importance to an early progenitor; and after having been slowly perfected at a former period, have been transmitted in nearly the same state, although now become of very slight use; any actually injurious deviations in their structure will always have been checked by natural selection. Seeing how important an organ of locomotion the tail is in most aquatic animals, its general presence and use for many purposes in so many land animals, which, in their lungs, or modified swim-bladders, betray their aquatic origin, may perhaps be thus accounted for. A well-developed tail having been formed in an aquatic animal, it might subsequently come to be worked in for all sorts of purposes, as a fly-flapper, an organ of prehension, or as an aid in turning, as with the dog, though the aid must be slight, for the hare, with hardly any tail, can double quickly enough."* This, though somewhat fanciful, we think is certainly an ingenious "working in" of old material. We shall make one extract more from Mr. Darwin's extraordinary book, in order that the reader may see to what lengths an unbridled imagination may carry even a man of science. The author thus traces the successive stages of development, under the constant supervision of what he calls natural selection, which are to be passed through, before an organ of vision—the eye—can grow into what it is:—

"It is scarcely possible to avoid comparing the eye to a telescope. We know that this instrument has

* *The Origin of Species by Natural Selection*, p. 215.

been perfected by the long-continued efforts of the highest human intellects; and we naturally infer that the eye has been formed by a somewhat analogous process. But may not this inference be presumptuous? Have we any right to assume that the Creator works by intellectual powers like those of man? If we must compare the eye to an optical instrument, we ought in imagination to take a thick layer of transparent tissue, with spaces filled with fluid, and with a nerve sensitive to light beneath, and then suppose every part of this layer to be continually changing slowly in density, so as to separate into layers of different densities and thicknesses, placed at different distances from each other, and with the surfaces of each layer slowly changing in form. Further, we must suppose that there is a power (natural selection) always intently watching each slight accidental alteration in the transparent layers, and carefully selecting each alteration which, under varied circumstances, may in any way, or in any degree, tend to produce a distincter image. We must suppose each new state of the instrument to be multiplied by the million, and each to be preserved till a better be produced, and then the old ones to be destroyed. In living bodies, variation will cause the slightest alterations, generation will multiply them almost infinitely, and natural selection will pick out, with unerring skill, each improvement. Let this process go on millions of years; and during each year on millions of individuals of many kinds; and may we not believe that a living optical instrument

might thus be formed as superior to one of glass as the works of the Creator are to those of man"? *

While transcribing the above singular passage we have been forcibly reminded of Kepler's fortuitous salad. The story goes (it is related in Mr. Drinkwater Bethune's *Life of Kepler*) that the astronomer having delayed coming down to his supper, his wife, who was somewhat of a shrew, took him to task for keeping her waiting. He excused himself by telling her he had got so absorbed in thinking of the theory of "the fortuitous concourse of atoms," that he had forgotten the salad she had prepared. Katherine naturally asked for an explanation of this odd theory. He replied:—"Suppose that from all eternity there had been flying about atoms of vinegar, and atoms of oil, and atoms of lettuce, you perceive that, in time, we might have a salad." "Aye aye," said his wife; "all that might be:—but you wouldn't get one so nicely dressed as this is"! So in reference to the fortuitous eye, formed as above supposed; we think it would have been a far inferior eye to that which Mr. Darwin employed in penning the foregoing scheme. Yet such are the speculations "which," Professor Powell affirms, "must soon bring about an entire revolution of opinion in favour of the grand principle of the self-evolving powers of nature"! †

The writings of Bishop Colenso abound in assertions to the effect that modern science is opposed to the statements of the Bible; but he has never in a single

* Darwin, p. 208.

† *Essays and Reviews*, p. 109.

instance attempted to prove such to be the case. He takes a declaration of Scripture and compares it with some mere speculation, like that above, in reference to matters, beyond the reach of human observation, of which, if man is to know for certainty anything at all, his knowledge must come to him, not by science, but by Revelation; and instead of shewing that the Bible is opposed to modern science, he merely proves that modern speculations are opposed to the Bible. In the extract given above, the author of the elaborate eye-making process, there described, says "that a living optical instrument might thus be formed as superior to one of glass as the works of the Creator are to those of man." But if "He who made the eye," had really matured its construction in this complicated, wearisome, and tentative manner, the appellation of "the Creator" could not be justly applied to him. Indeed there is so much haziness about this visionary scheme that the reader cannot recognize anything approaching to a creative power at all. What the author calls "natural selection" is regarded throughout his book as some discriminating agency in *nature*; so that when he requires us to "suppose that there is a power (natural selection) always intently watching each slight accidental alteration" &c. in the rudiments of an eye yet unformed, he requires us to suppose that a perfectly formed eye was superintending the formation of the *first* eye! We cannot help thinking that the mixing up of such fanciful speculations as this about the origin of the eye, with the

well-established results of observation and philosophical research, is likely to bring—not the Bible, but science itself into contempt; at least among those who cannot discriminate between the wheat and the tares, thus sown together in the same field; and who do not know that “to ascend to the origin of things, and speculate on the creation, is not the business of the natural philosopher.”*

Moreover: the theory of “Natural Selection” conveys no conception of an intelligible process. Selection of any kind must necessarily have reference to a desired purpose—there must be a contemplated end—a foreseen ulterior result:—DESIGN. By believing in the actual existence of so occult a transforming principle, we may believe that, in course of time, men may literally “gather grapes of thorns, and figs of thistles”: for why should not the thorn, by development, become a vine, and the thistle a fig-tree, as well as a fish, by development, (as is actually asserted) become a man?†

Of a like character to the above are some of the recent theories of perverted science about the origin

* Herschel's *Discourse*, p. 38.

† “The eternal order of one simple system, in which the same beings, slightly changed, existed, and in which water is the destroying and fire the renovating principle, though supported by so much talent, fact, and experiment, has disappeared, for the sound geologist, with the more visionary ideas of the earth's being originally a portion of the sun; and of organised germs passing, in the immensity of time, through the different stages of improvement, rising from fishes, through mermaids, quadrupeds, and apes; and, at last, to perfect man!” *Six Discourses delivered before the Royal Society*. By Sir Humphry Davy, Bart. 1827, p. 52.

and antiquity of the human race. Professor Huxley, in his work on *Man's Place in Nature*, conceives the notion that man is a lineal descendant of the ape, and, from certain structural analogies, infers that the human being is only the chimpanzee, or gorilla, in an advanced stage of development:—"Brought face to face with these blurred copies of himself, the least thoughtful of men is conscious of a certain shock, due perhaps, not so much to disgust at the aspect of what looks like an insulting caricature, as to the awakening of a sudden and profound mistrust of time-honored theories and strongly-rooted prejudices regarding his own position in nature, and his relations to the under-world of life; while that which remains a dim suspicion for the unthinking, becomes a vast argument, fraught with the deepest consequences, for all who are acquainted with the recent progress of the anatomical and physiological sciences."

"Without question, the mode of origin, and the early stages of development of man are identical with those of the animals immediately below him in the scale:—without doubt, in these respects, he is far nearer the apes, than the apes are to the dog."

"Be the differences between the hand and foot of man and the gorilla what they may—the differences between those of the gorilla, and those of the lower apes are much greater." The author urges us, however, to remember—"that there is no *existing* link between man and the gorilla"; but at the same time not to forget "that there is a no less sharp line of de-

marcation, a no less complete absence of transitional form between the gorilla and the orang and the gibbon.

. . . . The structural differences between man and man-like apes certainly justify our regarding him as constituting a family apart from them, though inasmuch as he differs less from them than they do from other families of the same order, there can be no justification for placing him in a distinct order."

"The most superficial study would at once convince us that, among the orders of placental mammals, neither the whales, nor the hoofed creatures, nor the sloths and ant-eaters, nor the carnivorous cats, dogs, and bears, still less the rodent rats and rabbits, or the insectivorous moles and hedgehogs and bats, could claim our *Homo* as one of themselves. There would remain then but one order for comparison, that of apes (using that word in its broadest sense), and the question for discussion would narrow itself to this—Is man so different from any of these apes that he must form an order by himself? Or does he differ less from them, than they differ from one another, and hence must take his place in the same order with them?"

"Even in the important matter of cranial capacity, men differ more widely from one another than they do from the apes."

No creature, however, with the external form of man, that is, an erect biped with a smooth skin, has ever been discovered without the ability to kindle a fire: and no creature with a hairy hide has ever been found possessing that ability. In fact the smooth skin

alone will ever distinguish (externally) the man from the brute, however little they may differ in anatomical structure.

The brutes which Professor Huxley regards as the progenitors of man, are thus characterized by an old writer (Purchas), whom the Professor quotes :—" They cannot speake, and have no understanding more than a beast. The people of the countrie, when they travaile in the woods, make fires where they sleep at night ; and in the morning when they are gone, the pongoes [gorillas, or chimpanzees] will come and sit about the fire till it goeth out ; for they have no understanding to lay wood together." And, quoting from Mr. Ford's Paper on the Gorilla, in the Philadelphia Academy of Sciences, 1852, " He is said to seize a musket, and instantly crush the barrel between his teeth. . . This animal's savage nature is very well shewn by the implacable desperation of a young one that was brought here. It was taken very young, and kept four months, and many means were used to tame it ; but it was incorrigible, so that it bit me an hour before it died." Is there any approach to humanity in such a brute as this ?

" It is very long," says Professor Huxley, " before the body of the young human being can be readily discriminated from that of the young puppy. . . But, exactly in those respects in which the developing man differs from the dog, he resembles the ape. So that it is only quite in the later stages of development that the young human being presents marked differ-

ences from the young ape, while the latter departs as much from the dog in its development as the man does. Startling as the last assertion may appear to be, it is demonstrably true, and it alone appears to me sufficient to place beyond all doubt the structural unity of man with the rest of the animal world, and more particularly and closely with apes.”*

From the foregoing extracts the reader may get an idea of the kind of researches by which the Development Theory is supported, and the conclusion reached that, by natural development, the lowest grade of apes have ascended through the degrees of Gibbon, Orang, Chimpanzee, and Gorilla, up to MAN. Now development implies *continuity*: but in Professor Huxley's book we are presented only with insulated facts, which plainly declare nothing but *discontinuity*. No one link is united to that which succeeds it: the links are all independent, and widely separated. The author acknowledges (see p. 164 above) that nothing exists to fill up even one of the intervals. Surely where continuity ends, development ends. As we are told that there is nothing to connect the gibbon with the orang, the orang with the chimpanzee, the chimpanzee with the gorilla, nor the gorilla with man, on what grounds can we conclude that these are but so many separate terms of a *continuous* series? If such they really be, account for the separating gaps: shew us at least some indisputable *vestiges* of the wanting links, if not among the living, among the dead. Gorillas could not

* Professor Huxley's *Man's Place in Nature*, pp. 52-104.

have destroyed their offspring, or the chain of sequences would have ended with the gorilla : *he* would have been the last link. Nor could early man, we may presume have devoured his immediate parents : but they are gone—where are they—where the evidence that these, our brute ancestors, had any but a purely visionary existence in the imagination of theorising zoologists ?

We contend that there ought to be *living* evidence of these intermediate races : it is incredible that the superior beings should perish, and yet the inferior, from which they have proceeded, continue to exist :—that creatures more advanced in the scale of nature, having attained to their superior elevation by the slow process of continuous development, should then have disappeared ; while their remote, and less perfect, ancestors remained, and continued to propagate the more debased forms.

The author himself acknowledges “ that there is no existing link between man and the gorilla,” and “ a no less absence of transitional form between the gorilla and the orang and the gibbon” ; which is an admission that there are no grounds, in nature, for the development theory. To suppose that man has proceeded from the ape, *per saltum*, would be a still greater absurdity : in this way, there could have been no *proceeding*—no intelligible connection—at all : each must have been a distinct creation. And to suppose that the gaps of separation were ever actually filled up by intermediate creatures, all of which have perished and disappeared, is to suppose what is felt to be repugnant to nature

and to reason. As stated above, we cannot believe that the advanced types of man-like creatures decayed and wholly ceased to exist, while their degraded progenitors continued to live on and flourish. This would be not following the order of nature, but reversing it. Speaking for himself, the present writer, after a careful perusal of Professor Huxley's book, can truly say that—if there were no Bible in existence, and no light from any quarter thrown upon the early history of the human family, save what that book affords, the irresistible conclusion he would be compelled to come to would be that—from whatever primitive stock man may have descended, or in what way soever he may have made his first appearance on the earth, he cannot possibly have descended from an ape: that whatever may be the true theory of his derivation, the development theory, as unfolded in this volume, is altogether untenable and inadmissible. In short his conclusion from Prof. Huxley's recorded facts—all of which he receives—are diametrically opposite to those of the author himself: for he infers from these facts, not merely that the development theory is not established, but, on the contrary, that it is wholly negatived and destroyed. And his principal ground for this conclusion he has briefly stated above:—He cannot but think that, except among a very limited class of speculative philosophers, people will be slow to conclude that if there had existed no apes there would have existed no men; that, in fact, they will feel less hesitation in believing even that "The Lord God formed man of

the dust of the ground, and breathed into his nostrils the breath of life. And man became a living soul." Even if the anatomical structure of man bore a closer resemblance to that of the ape than it actually does, still the mere outer coverings of the two would we think preclude the idea of the intimate relationship contended for: the hairy hide of the one, and the delicate smooth skin of the other, would alone imply the distinct origin of each. Besides; the bony carcase—the least important part, is altogether inadequate to convey a correct idea of Man: We behold in *this* only what death has left; and the contemplation can furnish no clue to what it has taken away:—how little or how much.

But even from the exclusive study of the skeleton, Professor Owen, one of the greatest of living comparative anatomists, comes to conclusions directly opposed to those of Mr. Darwin and Professor Huxley. He says—

"No known cause of change productive of the varieties of mammalian species could operate in altering the size, the shape, or the connections of the premaxillary bones which so remarkably distinguish the troglodytes gorilla, not from man only, but from all other anthropoid apes."

"The unity of the human species is demonstrated by the constancy of those osteological and dental characters to which the attention is more particularly directed in the investigation of the corresponding characters of the higher quadrumana. Man is the sole species of his

genus, the sole representative of his order and subclass. Thus, I trust, has been furnished the confutation of the notion of a transformation of the ape into man.”* Another eminent naturalist remarks :—

“ Whatever may be said about the possibility of such Simian development, the possible human deterioration is an inevitable attribute of the rational, moral, free-agent, man ; capable of the noblest aspirations, and of wondrous intellectual development, but also with a capacity for moral degradation such as belongs to him alone of all created beings. The one characteristic as well as the other, separates man by an impassible barrier from all those other living creatures that might appear in some respects gifted with endowments akin to his own.”†

We would express the fact here stated in even a stronger form : not only is there in man “ a *capacity* for moral degradation ; ” but, without the restraints of civilisation, and the still higher restraints of Revelation, there is in man a *tendency* to moral degradation. In the earlier ages, an occasional band of fugitive slaves, or of escaped criminals, furnished by external aid with provisions and a boat, shaping their course they knew not whither and cared not whither, and driven across the ocean by tempestuous winds, may have isolated themselves in various wild and distant places ; and, freed from all the restraints just mentioned, each successive generation would sink lower and lower in

* Owen : *Classification of Mammals*, Appendix B.

† Wilson's *Pre-historic Man*, p. 182.

the moral and intellectual scale; and such degraded specimens of humanity as those which the Bosjesmans, the Andaman Islanders, and the Australian Savages, present, might well be the ultimate result.*

On the other hand, voyagers of a different stamp may have been carried, perforce, to the shores of America long ages before the Spaniards landed on that continent. As Washington Irving suggests "A wandering bark may occasionally have lost sight of the land-marks of the old continents, and been driven by tempests across the wilderness of waters long before the invention of the compass; but never returned to reveal the secrets of the ocean."† Captain Bligh and his unfortunate companions were sent adrift, with scarcely any supply of provisions, by the mutineers of the ship "Bounty," and performed the perilous voyage of upwards of three thousand miles in an open boat. It is perfectly credible therefore that a ship, or even a common boat, with a few civilised persons of both sexes on board, may have been compulsorily carried from the

* "The native Australian, and the Andaman Islander, may be taken as fairly representing the lowest state of human society of which we have any certain knowledge. These savages have articulate language; they know the use of fire; they have tools, though but simple and clumsy ones. . . . There is no authentic account of any people having been discovered who did not possess language, tools, and fire." (From a paper, in the first number of the *Anthropological Review*, p. 21, by Mr. E. Burnet Tylor.)

† *Life and Voyages of Christopher Columbus*. Book I. "In one of the houses at Guadaloupe, the Spaniards were surprised to find a pan or other utensil of iron. . . . Certain it is, that no native iron was ever found among the people of these islands. In another house was the stern-post of a vessel." Book VI., chap. ii.

shores of the old world to those of the new, many centuries before Columbus crossed the Atlantic Ocean, and that to some such tempest-tossed wanderers and their descendants, the ancient cities of Mexico, Yucatan, and Peru, may have owed their existence. Moreover, the appearance and disappearance of islands are no uncommon phenomena now. Who can tell what island stepping-stones there may have been, in remote times, even to America and Australia?

Mr. Darwin supports his theory of ape-development by referring to the natural history of the pigeon, which he says has advanced by continuous gradation from the common rock-pigeon, up to the carrier and tumbler. Professor Wilson however draws a different, and we think a far more reasonable conclusion from this fact:—namely, that as all the numerous varieties of the pigeon are traceable to one primitive *pigeon*-stock, so all the varieties of man, are, at least, as likely to have proceeded from one primitive *human*-stock.

It is well known that the physical effects of habitat are very remarkable on all animals; not only changing their external colour, but even modifying their actual structure. “The tuskless, bristleless, domesticated pigs, which the French and Spaniards introduced into the Falkland Islands about the beginning of last century, have now become a wild fierce race, with great tusks and stiff bristles, some of the old boars of which would do honour even to Erymanthus. The rabbits, too, have so much changed, not in mere external covering only, but in conformation of head and jaw,

that Cuvier himself, ignorant of the fact of their origin, regarded the skull of one which was sent him as a distinct species." "Bearing in mind the wonderful effects which habitat is capable of producing on other animals, we incline to the convertibility of races, and believe that, in lapse of ages, either would assume the characteristics of the other. How long it would require to stamp a European race with the thorough characteristics of the negro, or *vice versâ*, we do not know; no proper trial has ever been made; and though the experience of several centuries lies before them, ethnologists seem rather to indulge in their own hypotheses, than begin to collect data from actual existences. The United States, peopled by English, Scotch, Irish, French, and Germans, have in the space of a couple of centuries produced a style of figure and physiognomy different from any of the originals — a style so peculiar, that we know of no European traveller who has failed to remark it." *

We have seen from the foregoing extracts and remarks, that conclusions of the most important character have been deduced from data purely arbitrary, and of which observation gives no account. Such conclusions can have not the slightest scientific value; since observation alone can supply materials for the construction of the sound and admissible theories of

* From an interesting paper on the "Effects of Habitat on Animals," in *Chambers's Journal* (June 27, 1846): chiefly compiled from the researches of Mr. Darwin, and M. Gloyer of Breslau.

physical science. A theory may indeed be imagined anterior to the discovery of the phenomena actually implied in it ; but as long as observation fails to detect these phenomena, so long does that theory remain merely an unverified speculation ; and,—call it what we may, it is certainly not science. And conclusions, really based upon observation, are equally inadmissible, whenever they comprehend remote periods of time, either past or future, if the phenomena observed now, being of an unsteady or fluctuating character, may become so modified by lapse of time, as to be different, at present, from what they were or will be.

Let us imagine that the exact likeness of one of the antediluvian patriarchs, in his declining years, could be inspected now ; and that we were quite ignorant of the original : the conclusion, as to his age at the time, would unquestionably be that he could not have been more than 80 or 90 years old ; whereas he may have been 800 or 900. Or imagine the same antediluvian to be resuscitated, and to appear amongst *us* : he would naturally conclude, upon seeing a person in the decrepitude of old age, that he had lived 8 or 9 centuries. These speculators—the modern and the ancient—would each determine agreeably to all the accumulated experience of his own period ;—and each would be wrong.

As illustrations of this inadmissible latitude of conclusion, we shall quote a passage or two from Sir Charles Lyell's recent work *On the Antiquity of Man*.

In alluding to the present progressive elevation above the sea of certain marine strata that once marked

the level of the sea-coast, and which are now found, in Norway, at the height of 600 feet and upwards, Sir C. Lyell observes:—"The upward movement now in progress, in parts of Norway and Sweden, extends throughout an area of 1,000 miles north and south, and for an unknown distance east and west, the amount of elevation always increasing as we proceed towards the North Cape, where it is said to equal five feet in a century. If we could assume that there had been an average rise of two and a half feet in each 100 years for the last 50 centuries, this would give an elevation of 125 feet in that period. In other words, it would follow that the shores, and a considerable area of the former bed of the North Sea had been uplifted vertically to that amount, and converted into land in the course of the last 5,000 years. A mean rate of continuous vertical elevation of two and a half feet in a century would, I conceive, be a high average, yet even if this be assumed, it would require 24,000 years for parts of the sea-coast of Norway, where the post-tertiary marine strata occur, to attain the height of 600 feet."*

We would here ask : Does this uplifting force, whatever it be, *increase* in intensity with the increase of load to be uplifted? If not, the rate of elevation must rapidly diminish, as the elevation itself increases. The force that could lift to the height of 50 feet in one century, might be inadequate to raise the mass an additional five feet in the next; inasmuch as, together

* Lyell : *On the Antiquity of Man*, p. 58.

with this five feet, the 50 feet, *already out of water*, must be uplifted with it. At the commencement of the uplifting, the expansive force driving the mass upwards, must have acted with its maximum energy: it must have gradually diminished in the very act of expansion; while the load to be lifted, rising out of the water more and more, must have as gradually increased. How then can any average rate of ascent be inferred from observations as to *recent* vertical progress? Similar reasoning is employed to determine the time that must have been requisite for the accumulation of the sedimentary deposits which form the deltas of large rivers: thus, with respect to the delta of the Mississippi, it is remarked:—

“Although we cannot estimate correctly how many years it may have required for the river to bring down from the upper country so large a quantity of earthy matter—the data for such a computation being as yet incomplete—we may still approximate to a minimum of the time which such an operation must have taken, by ascertaining experimentally the annual discharge of water by the Mississippi, and the mean annual amount of solid matter contained in its waters. The lowest estimate of the time required would lead us to assign a high antiquity, amounting to many tens of thousands of years (probably more than 100,000) to the existing delta.”

But this reasoning assumes that the earthy matter carried down from the upper country, and depositing itself, year after year, throughout the earliest ages,

from the very commencement of the delta-formation, was renewed as rapidly as it was carried away ; otherwise, by whatever quantity the supply had at any time been diminished, by so much less would be the future yield. To give any value to the foregoing deductions, from experimental examinations *now*, of “the mean annual amount of solid matter contained in its waters,” the supplies of this solid matter must be proved to have remained undiminished by the consumption demanded and afforded. But can it be really *supposed* even (proof is, of course out of the question), that as much silt is carried down the river now, when there is little to be carried, as in the beginning, when there was much to be carried :—that the loose matter, abundant at first, and readily yielding to the abrasion of the stream, and the denuding effects of weather, is somehow or other—like the widow’s cruse of oil—continually renewed, offering itself spontaneously for the purpose of building up the delta, at the fixed average rate of so much a year ; as if the construction was carried on by contract ? It is plain that the more of this loose matter which was borne away in the earlier periods, the less must be left to be borne away during the later periods ; and nothing can be fairly inferred, from the present supply, in *favour* of the great antiquity of the delta, whatever may be fairly inferred *against* that antiquity. Even admitting that all the denuding causes operated with no more intensity thousands of years ago than they do at present, yet rocks, that those causes have laid bare now, were then

covered with the loose matter subsequently, and by degrees carried away.

Similar considerations apply to the present observed slow recession of the falls of the Niagara. It is inferred, from this slow retreat, that 35,000 years must have elapsed since these falls were at a certain place, lower down the river, where indications appear of their having once been. But the rushing stream, having greedily fed, as it were, upon the original ample supply, is necessarily now upon short allowance, from the diminution of the stock; whereas the *present* rate of consumption is assumed in the calculation, by which the above-named number of years is reached, to have been the average rate during the whole period!

It is stated, on the authority of Count de la Marmora, that at Cagliari and in the neighbourhood, an ancient bed of the sea, containing marine shells of living species, and numerous fragments of antique pottery, has been elevated about 300 feet above the present level of the Mediterranean; on which Sir C. Lyell remarks:—"If we assume the average rate of upheaval to have been, as before hinted (p. 58), $2\frac{1}{2}$ feet in a century, 300 feet would give an antiquity of 12,000 years to the Cagliari pottery, even if we simply confine our estimate to the upheaval above the sea-level, without allowing for the original depth of water in which the mollusca lived. Even then, our calculation would merely embrace the period during which the upward movement was going on; and we can form at present

no conjecture as to the probable era of its commencement or termination.”*

We can account for such calculations as these, and the purely hypothetical data on which they are founded, only from a desire to reach high numbers. What ground is even alleged for assuming $2\frac{1}{2}$ feet, rather than any other number of feet, more or less? The uprising seems now to have ceased: but it is reasonable to suppose that the motion gradually slackened, more and more, till it thus wholly subsided. There was a time, therefore, when the average rate of movement upwards must have diminished to 1 foot in a century, then to half a foot; and so on, till all movement had ceased: so if the calculation had been made ages ago, instead of now, the 12,000 years would have expanded to 30,000, 60,000, or even to an infinite number of years: in fact, upon the above principles, this ought to be the inference now, if the rise at present is imperceptible.

“The submergence of Wales to the extent of 1,400 feet, as proved by glacial shells, would require 56,000 years, at the rate of $2\frac{1}{2}$ feet per century; but taking Professor Ramsay’s estimate of 800 feet more, that elevation being required for the deposition of some of the stratified drift, we must demand an additional period of 32,000 years, amounting in all to 88,000; and the same time would be required for the re-elevation of the tract to its present height. But if the land rose in the second continental period no more than 600 feet

* Lyell: *On the Antiquity of Man*, p. 178.

above the present level, as in the mass p. 279, this 600 feet would have taken 26,000 years for its completion." The author adds, however: "I am aware that it may be objected that the average rate here proposed is a purely arbitrary and conjectural one because, at the North Cape, it is supposed that there has been a rise of about six feet in a century, and at Spitzbergen, according to Mr. Lamont, a still faster upheaval during the last 400 years. But granting that in these exceptional cases (none of them as yet well established) the rising or sinking has, for a time, been accelerated, I do not believe the average rate of motion to exceed that above proposed."*

No doubt the author has full right to believe or not believe whatever he chooses; but as no reasons are assigned to justify even his own conclusion, all being "purely arbitrary and conjectural," that conclusion can have no weight with those who, the more ready they are to yield implicit obedience to the teachings of *science*, are the less inclined to acknowledge the authority of mere *opinion*.

We shall now give an extract from the writings of Mr. Gosse, a philosophical naturalist of very different views:

"Certain investigations made in the alluvial deposit of the Nile are considered to prove that man has been living in a state of comparative civilisation in the Nile Valley for the last 13,500 years. But that conclusion absolutely rests on the supposition that the rate of increase formed by the annual deposit of the Nile-mud

* Lyell; *On the Antiquity of Man*, p. 236.

has been always exactly the same as now,—a supposition, not only without the least shadow of proof, but also directly contrary to the highest probability, nay, certainty, in the estimation of those who believe in the Noachian deluge. For surely the drainage of the entire plain of North Africa after that inundation, must have produced an alluvium of vast thickness in a very brief time ; while beneath that deposit the works of the antediluvian world might well be buried. Yet the possibility of there ever having been any greater rate of deposit than within the last 3,000 years, the recorder of those investigations, in his unseemly haste to prove the Bible false, strangely leaves wholly out of his consideration.”* Speaking of extinct species, the same author remarks :—“ These forms, many of them so huge and uncouth, are well known as having tenanted various regions of the earth during what is known as the Tertiary Era, in its later periods. They certainly do not exist in those regions now. When did their life—their species life—terminate ? I have been assuming that they were upon earth as living sentient beings, in the earliest ages of what we call the historic period—that is, according to the chronology of the Word of God, which must be true, within the last 6,000

* The fact here noticed, of the rapid formation of deltas after the Deluge, remains the same, whether the region of these deltas be regarded as old land once inundated, or new land once at the bottom of the sea. Sir C. Lyell, in a former work, says “ No combination of causes has yet been conceived so capable of producing extensive and gradual denudation as the action of the waves and currents of the ocean upon land slowly rising out of the deep.”—*Elements of Geology*, vol. I. p. 191.

years. This assumption is so heterodox that, unsupported by evidence, it would be generally rejected: let us inquire what evidence there is that man was an inhabitant of the globe contemporaneously with these huge giants of the bestial creation. The author then discusses the proof at length, and proceeds:—"I cannot help thinking that both the rhinoceros and this elephant [the elephant of which the skeleton is now in the museum of Petersburg] roamed over the plains of Siberia, not only since the creation of man, but even since the Deluge. . . . What supposition so natural as that, perhaps in a blinding snow-storm they slipped into a crevice in the ice-cliff, were snowed up, and thus preserved by the antiseptic power of frost to this age?"

Concerning the flint-implements discovered at Menchecourt, near Abbeville, and which are adduced as evidence of the high antiquity of man, the eminent geologist Mr. Prestwich, in a paper read before the Royal Society in 1859, and quoted by Mr. Gosse, says that "He does not consider that the facts of necessity carry man back in past time more than they bring forward the great extinct mammals towards our own time, the evidence having reference only to relative, and not to absolute time. In fact, from the evidence here exhibited, and from all that he knows regarding the drift-phenomena generally, the author sees no reason against the conclusion that this period of man and the extinct mammals—supposing their contemporaneity to be proved—was brought to a sudden end

by a temporary inundation of the land ; on the contrary he sees much to support such a view on purely geological considerations.”*

But admitting the high antiquity of the bones, analogous to those of the human being, and of the earved implements, very recently discovered in the department of Tam et Garonne, and which, through the exertions of Professor Owen, have been secured for the British Museum, all that can be fairly inferred from the discovery is—that creatures externally man-like, and endowed with intelligence superior to that of the lower animals now living, were in existence ages before the creation of Adam. As already observed (p. 170), from what death has left behind, we can infer nothing as to what it has taken away over and above the mere animal life. An erect creature, like man, furnished too with similar bodily organs, let him have been placed on the earth whenever he may, *must* have been endowed with a measure of intelligence sufficient to enable him to sustain the life that had been bestowed. He could not have coped with, and captured, wild and swift-running quadrupeds, nor birds, nor fishes, without artificial weapons ; and where there were hands, handieraft, to at least this extent, must have resulted. Now in the Mosaic account of the creation of MAN, not a word is said about his bodily structure and organization : we have not the slightest information as to whether in these respects he differed from former crea-

* *The Romance of Natural History*. By Philip Henry Gosse, F.R.S. Part II., pp. 16-46.

tions or not. There is no reference to the beauty of the casket, exquisite as its workmanship is: it is to the priceless jewel within—and, but for which, the animated clay would have taken its place among the beasts of the field:—it is to this, the moral and spiritual inhabitant of his frame, that his superiority and dignity is distinctly ascribed in the record of his creation. However, many creatures may be proved to have existed before Adam, in the outward similitude of *man*, no one of them can be proved to have been made in the image of God: nor can the Mosaic Record be in the slightest degree invalidated as to the revealed fact that, subsequently to these lower creations, “God made *Man* in his own image, and breathed into his nostrils the breath of life, and man became a living soul.”

Hence these modern researches into the “Antiquity of Man,” highly interesting and valuable as they unquestionably are, as extending our knowledge of the natural history of remote ages, have not the slightest bearing upon the Mosaic Record. Those who maintain the contrary, do so on grounds purely conjectural and imaginary; and their gratuitous theories are therefore destitute of all scientific value. In fact, the conclusion arrived at in these theories is actually assumed in the very premisses.

From the discovery of fossil skulls, detached fossil bones, and rude flint implements, it is inferred (according to Professor Waitz) that “we are justified to assume the age of man to be between the extreme limits of 35,000

and 9,000,000 years"! Is it not an egregious abuse of the term to call this a *scientific* conclusion? Conceding even the great antiquity of the specimens, what is the *legitimate* conclusion? Why simply this:—that at the remote period referred to there existed a race of creatures whose fore-limbs terminated in hands, instead of hoofs, or paws. Can anything more than this be *fairly* inferred? Can we, without disregarding all the wholesome restraints of real science, presume, on the strength of this evidence alone, to call such a creature MAN? we say, on this evidence *alone*, the evidence, namely, of the existence, prior to man, of an erect creature with *hands*.

The flint implements add nothing to the force of the conclusion. Let only the existence of the hand be admitted—a hand similar, as respects the position of the thumb, to that of the human being, and work, which the hand alone could execute, would necessarily be produced, whether we could ever discover traces of it or not: for the Creator would never bestow a hand without also bestowing a capacity to use it. We state this position in the most unqualified manner; because we address those only who receive the hypothesis of an Intelligent Creator.

We submit, therefore, that it is a misnomer, and one implying an assumption, at the outset, of the very thing to be proved; to call the researches into the antiquity of any two-handed animal, about which we know nothing whatever more than that he *was* two-handed:—we say it is a misnomer to call these—"Re-

searches into the Antiquity of *Man*." The remains of the assumed man are found with those of his contemporary brutes which have perished and become extinct: how is it that *he* survived the catastrophe that destroyed *them*?* Even admitting that the biped did survive, and that he could be traced up, through the asserted 35,000 or 9,000,000 of years, till he approaches the historical period, how would that falsify the Mosaic Story? There is nothing in that story to imply that the structural formation of the new creatures were all wholly unlike everything that had theretofore been produced and been destroyed. The words of the Creator,—“Let us make man *in our image, after our likeness*,”—imply, not that an erect biped had never before existed, but that, till then, no creature had ever been created, and placed on this earth with the elevated psychical endowments of MAN.†

If it be not proved that the so-called man of Abbeville, and St. Acheul, and Amiens, and the Bruniquel cave, was a creature of this type, *his* antiquity has nothing to do with the antiquity of the exalted moral and in-

* It may perhaps be asked here:—How is it that *some* of the contemporary races of animals *did* survive, and exist now? We reply—The assertion is not proved; nor can it be proved that these, however like their predecessors, were not subsequent creations.

† In certain *structural* peculiarities the ape can claim a superiority over man: with an inferior hand, he has a superior foot. “The ape can use his great toe like a thumb: the human being is not quite up to that, but is constrained to use his great toe only for the dull and prosaic purpose of walking and running. Hence his *differentia* from his more highly favoured cousin the ape.” See an amusing paper on “The Opposability of the Great Toe,” in *Church and State Review*, for Oct. 1, 1864.

tellectual being who has thus supplanted him, and to whom was given "dominion over every living thing that moveth upon the earth"; which dominion would have extended even to the ancient flint-implement makers themselves, had they been permitted to perpetuate their race up to man's advent.

We are aware that this reference to the Scripture solution of the problem of man's origin will be regarded by some as irrelevant; and the testimony, as matter of evidence, inadmissible. The distinguished President of the Anthropological Society of London, in his inaugural address says:—"The theologian (as such) has no right to interfere with the conclusions of physical science; and the man of science (as such) can know nothing of matters of faith." We not only endorse this sentiment, but we go further:—Not only can the man of science (as such) know nothing of matters of *religious* faith (which is the faith obviously meant in the above extract) but he can *know* nothing of matters of *scientific* faith. If speculative reveries, and scientific credulity, lead him to pronounce dogmatically upon matters beyond the sphere of human observation—matters which, if known to man, for certainty, at all, can be known only through revelation, then, we say, that science transgresses its legitimate bounds,—usurps the place of a higher authority, and revelation has a *right* to expel the invader, and assert its own claims.

But leaving these claims entirely out of consideration, we may safely affirm, as a position conceded by all men

of science, that, in his moral and intellectual endowments, man is the most exalted being that treads this earth: we affirm too, without much fear of contradiction, that he is also, morally and intellectually, one of the most degraded of beings that treads the earth. We need not go so far as the Adaman Islands, or the interior of Australia, to prove this.

Now we would ask:—Which of these two states is his normal condition? We submit that reason, and observation, and common sense, will answer:—The *former*. But his normal condition must surely have been his *created* condition. All our experience of the Creator's workmanship justifies this conclusion. When we contemplate the nest of a bird, the cell of a bee, or the web of a garden-spider, we admire the fabric, we exclaim—"There's evidence of *instinct*":—and turn away. But there is evidence of much more than what we are pleased to call instinct: there is evidence of the surpassing perfection in which the Maker of the bird, the bee, and the spider, turns out his work.

It seems to us that Anthropologists are prone to commence their speculations and researches at the wrong end. They fix upon the lowest and most degraded race of savages, or even upon a still lower class of creatures—bimanous brutes; and then expend all their labours in efforts to trace existing man from *them*; taking for granted that such *must* have been man's wretched origin. But why not start with the opposite assumption (both being regarded as but scientific hypotheses), and take for granted that man

was originally, like the bird, and the bee,—a perfect being; and that—since all experience shows he has the *capacity* to degenerate—the savage is only one of his degraded descendants, and not his primitive ancestor?

Do the advocates of the former hypothesis, we would ask, really believe *this*:—Do they believe that if the present Andamans were to be for thousands of ages, entirely excluded from all intercourse with races of men superior in civilization to themselves;—that none but savages like themselves should ever become known to them:—Do the philosophers alluded to, really believe that, after this total and complete isolation for tens of thousands of years, if a company of enlightened Europeans were suddenly to come among them, that (though the island abounded in the requisite materials), the visitors would find splendid cities—bridges—and railroads? That they would find scientific museums, and observatories replete with magnificent instruments, and with archives rich in the most exalted discoveries of astronomy? That they would find galleries of art, adorned with paintings equalling the choicest European productions? In fact, all the literature, learning, science, and art, of highly civilised life?

Let it be remembered that these queries are put with the distinct condition that the savages never had any instruction from civilised man,—that they had never even seen man in any higher condition than themselves. Those to whom they are addressed must

reply "Yes" to these questions: they are compelled to do so, or else to relinquish their hypothesis as untenable. They are compelled to admit the monstrous conclusion that the existing literature and science of Europe has grown up from such wretched soil as this—from unaided, self-taught, savages in the lowest state of degradation; or even from a horde of creatures still lower than human savages. External aid from superior races is, of course, precluded; for if any *superior* race be supposed, it must have attained its superiority from the same level, and by the same self-improvement; and our queries apply to the savage primitives of *that* race.

The now existing Andamians, and native Australians, can claim the same remote ancestry, which modern theorists assume, equally with the enlightened European. The question is—not as to the antiquity of the Andamians, or the Australians merely,—but as to the antiquity of *Man*—the origin of the human family. All *originally* occupied the same low level (according to the theory), were placed in the same helpless condition, and were surrounded by the same apparently insuperable difficulties. And in proportion as it is *credible* that, during all these thousands of ages, the Andaman Islander should have done so little,—in that proportion is it *incredible* that the European should have done so much? Believe either of these results, and the tendency to disbelieve the other is irresistible in every mind, unbiassed by a preconceived theory, that calmly reflects upon the irreconcilable character

of the two cases. Whereas, that companies of civilised men (civilised desperadoes, for instance),—migrating to uninhabited regions, and isolating themselves from all the advantages, and all the wholesome restraints, of the society they had left, might, after many ages, degenerate into savage hordes,—is no more than what might reasonably be expected. And we have already seen (p. 173) how change of habitat can, in time, modify not only external aspect and colour, but also structural formation.

But to return to the bipeds, herding with the now extinct beasts of the forest, and chipping their flint implements in dens and caves: what proof is there that they were other than a peculiar race of two-handed apes—with that amount of intelligence only which capacitated them to use the hands *given* them for use?

And in order to form a reasonable notion of how *much* a creature, with but a small amount of brute-intelligence, might be able to do if he possessed the human hand, we need only consider how *little* mankind would have done if the human arm had terminated in a hoof or a paw.

The recent discovery of flint-implements with the outline of an animal rudely scratched upon them, has been thought evidence sufficient of humanity: but as the parrot, the bullfinch, and the American mocking-bird (the latter, remember, self-taught), can so well copy what addresses itself to the *ear*—where is the marvel that, with only a like amount of intelligence, a

creature with hands could roughly copy what is addressed to the *eye*? *

To arrive at a complete and accurate idea of the external aspect and bearing of such a creature, it must appear before us in the living form: detached pieces of the bony framework merely, is surely insufficient for this. The specimen must be examined in its entirety, in order to justify any indisputable conclusion as to whether or not he is to be likened, in outward appearance, more to the ape, or to man. That he is very unlike man in stature, and in cranial capacity and formation, his fossil remains prove. "If we are to judge of the smallness of the skull, the development of the jaws, and other abnormities of the crania, found mingled with fossil bones and flint implements, the conclusion is not altogether unfounded that the original races were inferior to the succeeding immigrants, and also that the primitive race is now extinct

* Existing monkeys and apes are designated four-handed creatures:—*Quadrumanæ*, because the posterior as well as the anterior limbs terminate in prehensile organs. But the so-called hand of the modern ape is very different, as well in length as in the position of the thumb, from that of the human being. It is adapted chiefly for grasping and climbing, though quite available for the support of the prone body in walking; and it is a reasonable conclusion of Mr. Crawford, the President of the Ethnological Society, that "if there were no forests there would be no monkeys." The hand of the implement-maker may have been an organ much more like the human hand. Professor Owen finds, from anatomical examination, that "the bony hand of the gorilla is ten inches in length; in the man it is seven inches and one-third"; the height of the gorilla referred to being five feet six inches, and that of the man five feet nine inches. The stature of the creature whose fossil bones have been found is lower than that of any existing race—even of the Lapps.

in Europe, and has shared the fate of the gigantic animals with which it was contemporaneous."

This extract is from a long and comprehensive article intituled "Notes on the Antiquity of Man," in No. I. of *The Anthropological Review*. The writer is an advocate of the hypothesis of man's high antiquity: his paper, together with similar communications in that work, may be profitably consulted by all who are interested in the researches we have here been adverting to. But the unbiassed inquirer should read the several disquisitions on the Origin and Antiquity of Man, under a slight change of phraseology:—scientific precision renders this change necessary: For the term "man," he should substitute "animal with two hands." The latter form of expression assumes nothing as to psychological elevation above the brute: the former, implies this distinctive superiority; and therefore involves a gratuitous, and an utterly unauthorised, assumption.

The writer just quoted admits that the *European-man* is a distinct race from what he calls "the primitive race": whether or not the Negro and the Australian be members of this subsequently-created family, is a question which we think the researches of Dr. Pritchard and others have sufficiently disposed of (see p. 108). And we have already briefly indicated how a community, of this European type, might degenerate into a savage horde (p. 192).

It is much more easy to conceive of this degradation—much more consonant with the facts of natural

science—much more in accordance with the civil and social histories of the nations of the earth—than it is to conceive of man rising, of himself, from so debased a level up to the European standard. And since in addition to all this, man in his normal state, *must* have been the state in which he left the hands of his Creator—if he had a creator at all—the hypothesis of his brutal origin is contrary to sound inductive physical science—contrary to all analogy and experience of natural phenomena—and, at the same time, contrary to the clearest declarations of the Bible. Reason, observation, Scripture, and common sense, all concur in shewing that the debased condition of the bestial and remorseless savage is not the condition from which the highest type of man has risen, but the condition to which he has fallen: in fact, that his primitive state was his perfect state.*

And now, in terminating these remarks, we would seriously ask any intelligent man, who is not, in the *modern* sense of the term—that is, in the Aristotelean sense,—a man of science, whether, supported as it is by the concurrent testimony just adverted to, *this* view

* It may be proper to add that although, in the observations above, we have, for argument sake, conceded the high antiquity of the fossil ape-bones adverted to, yet we do not admit (nor deny) that antiquity; nor even the asserted antiquity of the Drift in which they and the implements are found. If the flint-workers were not really pre-Adamite creatures, they may have been human savages: but, in what is said above, we have conceded that they were pre-Adamite: and have endeavoured to shew that, be this as it may, it is incredible that civilised, intellectual, moral humanity, could ever have risen from such a miserable beginning. We shall suggest a very different theory in the sequel.

of the origin and present condition of the human race makes a larger demand upon his *faith* than that which requires him to believe,—from the bare fact that a few bones of a small baboon-headed creature, with hands like those of the human being, having been discovered, that those bones *must* have been clothed with human flesh, covered with human skin; that the creature *must* have possessed—and consequently *have invented*—articulate language; and that, though herding, with his fellows, among the beasts of the forest, without any external aid, without any example of a condition of existence higher than his own, he nevertheless, self-trained, self-instructed, self-moralised, attained to the science, the learning, and the social refinement, of modern Europe?

The origin of Language, like the origin of Man, is a subject which, without the light of revelation, is involved in impenetrable obscurity, and surrounded by insuperable difficulties. On the hypothesis that articulate language is of human invention, no wonder that Bunsen and others require tens of thousands of years for the formation of any spoken tongue. It is scarcely conceivable that articulate speech can have been otherwise than miraculously communicated to primitive man. In a state of nature, as it is called, the tones of the voice, expressive of emotion, and bodily sensation, and imitative of the calls and cries of the lower animals, and of other sounds and noises, in conjunction with natural gesticulation and expressions of countenance, would comprise the sole means—and, in the circum-

stances, a sufficiently adequate means—of intercommunication. Inarticulate language, thus constituted, is greatly more comprehensive and efficient than persons who have mixed but little with the deaf and dumb have any notion of. The want of articulate language could scarcely be felt in any community which had not already reached that social and moral elevation which articulate language itself can alone enable it to reach. The learned Professor Max Müller, after profoundly investigating the diversities of language, in speaking of the two great families, the Aryan and Semitic dialects, says “the analysis of the grammatical forms in either family has removed many difficulties, and made it at least intelligible how, with materials identical or very similar, two individuals, or two families, or two nations, could in the course of time have produced two languages so different in form as Hebrew and Sanskrit.” And he states his conviction that, however dissimilar the various dialects, “they are all nevertheless derived from one primeval language.” (*On the Science of Language. Lecture VIII.*)

That the origin of man and the origin of language were contemporaneous, is a position that human science and research can never controvert; while it is one that reflection and common sense urge us to accept as true. “If,” says Professor Müller, “you wish to assert that language had various beginnings, you must prove it *impossible* that language could have had a common origin.” It is as unreasonable to suppose that our first parents were placed on earth without the power of

speech, as it is to suppose they were without the power of locomotion. They *learnt* to speak just as much as they learnt to walk.

The zealous anthropologist, Dr. James Hunt, says "It is our duty to clear away the encumbrances with which dogmatism and ignorance have enveloped the study of Man, and we must shew the public that the origin of man is a question of physical science which can have no light thrown on it by authority or tradition." But we rather hold, with Sir John Herschel, that—"to ascend to the origin of things, and speculate on the creation, is *not* the business of the natural philosopher." And what is not the business of the natural philosopher, is *not* "a question of physical science."

Whatever be the evidence which relics discovered in the diluvium may furnish, to the anthropologist, of the existence of bimanous creatures a hundred thousand years ago, that evidence alone must be utterly valueless for the purpose of tracing the pedigree of existing Man. The great point to be proved is this, namely, that *there was no subsequent creation of superior beings*:—that, although, as is admitted by the discoverers of the fossil remains themselves, there was a subsequent creation of *quadrupeds*, there could not possibly have been a subsequent creation of featherless *bipeds*.

As soon as this indispensable proof is supplied, the ancient sage, who "was learned in all the wisdom of the Egyptians," must give place to the modern Jaw-bone-ists; and revelation must succumb to anthropological "science:" *but*—not before.

Such a proof however will never be forthcoming. *How* or *when* Man was first introduced on this earth, are questions which physical science can never answer; simply because they refer to events entirely beyond the sphere of human observation;—inasmuch as that, anterior to his first appearance, there was no human being to record the phenomenon; and if, after the fact, any one delivers a truthful utterance respecting it, he *must* do so—not from the light of physical science, but from that of inspiration. And be the existence of bimanous creatures, long ages before Adam, ever so clearly proved, the fact can have nothing whatever to do with the question as to whether or not *distinct* bimanous creatures, with superior psychical endowments, were created afterwards.

For however legibly the finger of Time may have inscribed 'on the bones of the pre-Adamite being the epoch of his death, not an atom of information, as to any event, then future, can possibly be indicated,—not even as to whether he himself was the last of his *own* race; much less as to whether a more exalted race was ever to succeed him. But imagination can always supply what nature withholds, and there are speculative philosophers “who,” to use the words of Galileo, “rather than see themselves driven to pronounce these wise, ingenuous, and modest words—*I do not know*,—will blurt out from their tongues and pens all sorts of extravaganeies.”*

* See the very interesting and instructive *Life of Galileo*, by Mr. Drinkwater Bethune, in the *Library of Useful Knowledge*, p. 72.

It will have been perceived that the principal object of the present section is to put the general reader on his guard against receiving, as the revelations of science, the merely speculative opinions of scientific men. We would deprecate in the most unqualified manner every attempt to check investigation and research in any department of nature whatever; and hold that no authority—not even that of the Bible—should be allowed to interpose to retard the advancement of genuine science.

To suppose, however, that Revelation *can* ever oppose science—that God's word should ever belie his works—is an absurd supposition, involving, as it does, the contradiction that truth may conflict with truth. And we advert here to such an hypothetical anomaly only the more emphatically to express the sentiment that investigation, into any department of nature whatever, is to be fearlessly prosecuted, regardless of all imagined consequences even to religion itself.

We maintain equally with Mr. C. W. Goodwin, that physical science should go on unconcernedly pursuing its own paths; but then let us always be sure that what assumes that name be really the genuine thing itself, and not a spurious article. The dissemination of speculative theories, imagined and invented for the express purpose of bringing the Scriptures into discredit with the unthinking multitude—however they may be disavowed by those who know what science is,—it is the duty of every one to try what he can to stop; just as it is his

duty to try to stop the circulation of the counterfeit coin of the realm.

Physical science, truly so called, has already done something to elucidate certain obscure portions of Revelation. But the Bible can do more for science, than science can do for the Bible ; and if physical inquirers, centuries ago, had only consulted its truths—those merely bearing directly on their own scientific researches, and with a view merely to a profitable use in those researches of the hints they convey—many a modern discovery would have long since been anticipated, and many a scientific error, for ages received as scientific truth, been avoided. The following are instances of this. Till less than a century ago, *Dew* was always regarded, as well by the philosopher as the peasant, as *falling* from above : but Dr. Wells proved by experiment that the reverse was the case—that it *distilled* from the earth.* Yet in a book 3,000 years old the following sentence occurs : “ My doctrine shall drop as the rain : my speech shall *distil* as the dew.” Less than fifty years ago, it was universally supposed that storms always took a direct, or nearly a direct course ; but since then, scientific observers have fully established the fact that the contrary is the case ; and hence the modern theory :—“ The Rotatory Law of Storms.” Yet Solomon says—“ The wind goeth towards the south, and turneth about unto the north : it whirlleth about continually ; and the wind returneth

* Wells : *Essay on Dew*. This small work is regarded as a model of experimental inquiry.

again according to his circuits." (Ecc. i. 6.) And in the chapter here referred to there is also anticipated, in a few words, the correct theory of terrestrial evaporation,—cloud-formation,—and rain.

Yet in spite of this, and of many other plain statements of philosophical truth, in the Hebrew writings, Bishop Colenso—though knowing that the Bible is in everybody's hands—has the hardihood to declare that the Hebrew writers believed and taught that rain came from celestial reservoirs above a solid firmament, through doors and windows; and supports the untruthful assertion by a reference to the obviously figurative portions of the language of the sacred *Poets!*

His aspersions and perversions of the Divine Record are as reprehensible as—what we cannot but call—the *Cant* with which he interlards them is offensive. If he be not in his right mind, he is to be commiserated: if he be, he is to be contemned;—not for his "*free* handling," but for his *unfair* handling, of the sacred Scriptures.

The following are exemplifications sufficient, as to what the Hebrews really considered to be the source of rain:—

Judges, v. 4:—"The clouds also dropped water."

Job, xxxvi. 27, 28:—"For he maketh small the drops of water: they pour down rain according to the vapour thereof; which the clouds do drop."

Psalms, lxxvii. 17:—"The clouds poured out water."

Eccle., xi. 3:—"If the clouds be full of rain, they empty themselves upon the earth."

But it may be said that, in some of these instances, the discoveries of physical science have themselves *suggested* meanings which the scriptural passages could not previously have conveyed: whether this be so or not, every reader can judge for himself. At all events, in what we are now about to quote, such an objection is utterly precluded. In the year 1690, the celebrated Huygens published a theory of refraction and reflection, founded on the hypothesis, that Light, like Sound, was propagated by the undulations of a subtile and elastic medium, which he supposed to pervade all space. Newton, his contemporary, held that Light was corporeal, and composed of minute corpuseles which were emitted from the luminous body: the two theories have been distinguished by the names "The Undulatory Theory," and "The Corpuseular Theory." The former failed to obtain acceptance among men of science till about the commencement of the present century. But it has now replaced the corpuseular theory; and, in Physical Optics, has become part and parcel of "modern science."

Now this important addition to modern science might at any time, during the last 3,000 years, have been deduced from what is clearly revealed in the first chapter of Genesis: and from this source alone, the physical principle of the philosopher Huygens actually *was* deduced more than a century ago, by a theological writer who knew nothing about Huygens or his hypothesis; and who, if he had ever read anything about optics at all, must, in common with the rest of his

contemporaries, have studied the subject as expounded by the corpuscular theory.

The theological writer here alluded to is Dr. J. Taylor; and the extract which follows is from a work intituled "*A Scheme of Scriptural Divinity, formed upon the plan of the Divine Dispensations. With a Vindication of the Sacred Writings.* By J. Taylor, D.D. London, 1762." It was reprinted by Bishop Watson in 1785.* Dr. Taylor thus writes:—

"There is one difficulty remaining, namely, that *light* was ereated before the sun. Whereas the sun is supposed to be the sole fountain of light, by emitting luminous partieles from its body. But I suspect the truth of this hypothesis: and Moses may be found a more accurate philosopher than is commonly imagined. It appears from elee-trical experiments, that light is a distinct substancee from all other, as much as air is from water; and that, by being properly excited, it may be made to appear in midnight darkness. Which shews, that it did exist in that darkness, previously to its being exeited. Consequently it may, and, I doubt not, doth exist, expanded through the whole visible system of things at all times, by night as well as by day; and that the sun, a fiery body, is, in our system, the great exeiter, by which the substance of light is impelled, and becomes visible. For were there no substancee of light previously existing throughout the whole system, no light would appear, though ten thousand suns should at once be plaeced in our hemispheres.

* Watson's *Theological Tracts*, vol. 1.

Just as the ringing of the bell produces sound, not by an emanation of particles from the substance of the bell, but by exciting the air, or the sounding substance, without which the bell could produce no sound at all. As the air will not sound, so the light will not appear without being excited. Upon this supposition the element or substance of light was created on the first day, and the divine power alone might be the exciter, which made the light appear for the three first days of creation, until the sun, the instrumental exciter, was produced."

In reference to this remarkable passage, Bishop Watson says—"N.B. Dr. Taylor, sometime after he had finished this scheme of Scripture divinity, met with the same thought and reasoning in the ingenious author of *NATURE DISPLAYED*; and was not a little pleased to find an hypothesis, which he judged peculiar to himself, adopted by so deep an inquirer into nature." The Bishop then adds a long extract from the work here mentioned, and in which the independent existence of the material of light is also maintained, and the Mosaic account of the production of light before the creation of the sun shewn to be consistent with truth, on the hypothesis that light, like sound, is not matter, but motion: which is the hypothesis (or rather the inference from Scripture) of Dr. Taylor, quoted above. If the author of the foregoing observations had been acquainted with the fact that so celebrated a man as Huygens, had regarded what is thus deduced from Scripture, as the independent testimony of physical

science, he would no doubt have appealed to that testimony in confirmation of the accuracy of his view of the Biblical account of the production of light before the sun. And if Bishop Watson, at the time of reprinting those observations,—which however was long before the undulatory theory had been generally received—had himself been aware of the hypothesis of Huygens, he would scarcely have failed to have alluded to it, with a similar object. Hence the conclusion is irresistible that a scientific theory of light, dating its existence, as such, only from the beginning of the present century, is founded upon an hypothesis which was fully announced nearly 40 years before, as a physical truth, implied in the Mosaic account of the creation; and that too by a theologian, who, if he knew anything at all of the physical science of his time, must have known that it was *opposed* to what he perceived to be, and what he explicitly declared to be, the doctrine of revelation. No doubt when a physical theory has received the sanction and imprimatur of science, a hint or two may be discovered in the Bible in apparent accordance with it. But here is an instance in which, independently of science altogether, a most profound and difficult department of physical research, founded on an obscure hypothesis which science was very slow to adopt, but which it has at length been compelled to receive—an hypothesis the necessary consequences of which it requires the very highest mathematics to develop—here, we say, is an instance in which even so recondite a subject as the modern

physical theory of the propagation of Light, is in its principle, actually anticipated by a man who knew nothing about it, beyond what the Bible had taught him, *except* that it was opposed to the prevailing science of the day. We are fully aware how injudicious it is, when any physical hypothesis has been devised, to search the Book of Revelation for whatever may seem either to confirm or contradict it; since the legitimate office of such an hypothesis is simply to explain the phenomena, and to shew that they would be logically deducible from the development of what is implied in it, be it the embodiment of a real principle in nature or not. But the instance here adduced is unique. In this, the Bible and Science have had, as it were, no communication:—two totally distinct and independent witnesses, without any collusion, have both testified to precisely the same thing, and that thing not a simple matter of every-day observation, but one that man, unless aided by the profoundest science, could not have unveiled.

In so much of the foregoing discussion as relates to the supposed evidence for the antiquity of man, as furnished by worked flint implements discovered in ancient deposits, we have carefully abstained from offering any theory of our own respecting their origin and use. We have restricted ourselves to an examination of the degree of *proof* these antique implements afford towards establishing the doctrine that man was coeval with the formation or deposition of the diluvium

in which they are found. And admitting (hypothetically) that they were really the fabrications of pre-Adamite creatures, we have endeavoured to shew that the evidence they supply is far too weak and scanty to justify the conclusion that they were the productions of human beings : that, as M. Castelnau has remarked (Anthropological Society of Paris, Séance, November 17, 1859).—"Much more mental energy would not be required by the gorilla to produce similar instruments."

But we have our own individual opinions on the subject : we have reserved the expression of them for these concluding pages of our volume. We do not regard the smaller of the *cat's-tongues* (so called by the French excavators on account of their form) as *hatchets* at all :—we do not regard them as offensive or defensive weapons. From their phleome-like shape, we consider them to have been *surgical* instruments ; and to have been used almost, if not quite, exclusively for the religious rite of circumcision.

No satisfactory explanation has ever been given of the fact that these instruments are so generally found in large collections in particular spots. It has been supposed that the circumstance indicated the place of their manufacture, as their deposit in such numbers could not have been accidental, baskets full of them having been dug out of the same place, and used by the workmen for repairing the roads.

Now we consider such localities to have been in the vicinity of sanctuaries, or holy places, in very remote,

but still in post-diluvian, times. Such sanctuaries would, of course, have been sufficiently supplied with suitable instruments for the performance of the rite of circumcision. It is very likely that when blunted, or broken, they would still have had a degree of sacredness attached to them, and have been religiously preserved. It may have been that a new phleme was used to every new subject. In this way the instruments fallen into disuse would, in the course of years, accumulate to a considerable number, and require to be disposed of. What more natural,—considering the religious respect with which they would be regarded, than that they should be deposited far out of the reach of sacrilegious hands,—buried deep in the earth, to secure them from being disturbed and abstracted by the profane, and desecrated to base or unholy purposes? Instruments of similar shape, but of larger size,—and more strictly entitled to the name of *hatchets*, as also spears, and knives, would be kept in the same sanctuaries for the sacrificial duties. These would not so rapidly fall into disuse: keenness of edge would not be a matter of so much solicitous consideration as it would be in an instrument employed upon the human subject. Still, such of them as had become unfit for service would, nevertheless, possess a degree of sanctity; and would be disposed of in a similar way.

No doubt hatchets, like in shape to the sacred implements, would also be used for domestic and secular purposes, even in the sacred edifices themselves. It would be necessary carefully to separate and distin-

guish these from the others; and how more effectually could the secular be distinguished from the sacred implement, than by figuring, upon the face of the former the outline of some *unclean* animal?

In places remote from any sanctuary or tabernacle, the father might perform the duties of priest for his own family; and the sacred instruments, when there would be no future occasion for them in the household, would, in like manner, be deposited deep in the ground, from the same all-pervading feeling of religious respect; and thus isolated worked flints might be sometimes discovered in such deposits.

It would be by no means remarkable if a secular hatchet,—one with the outline of a horse, or some other unclean animal figured upon it, were found buried with the sacred implements: the anxiety would be that all these latter should be secured from irreverent molestation, and not that every foreign body should be excluded from mixing with them.

From the above considerations we conclude that the worked flints have no chronological connection whatever with the stratum in which they are found, or with the fossil bones of extinct animals in proximity to them; and that they are not only of post-Adamite but of post-diluvian fabrication.

The uncivilized inhabitants of certain of the Papuan Islands perform circumcision upon their male offspring to the present day. They derived the practice from their ancestors; but know not how it originated: it

had been observed from time immemorial,—ages before any missionary had appeared among them.* How or when was the custom introduced? It cannot be but that it was imported with the aborigines themselves;—the descendants of “the families of the sons of Noah: by these were the nations divided in the earth after the flood.” (Gen. x. 32).

An early specimen of the stone implement used by the Papuans would be a highly interesting relic: we should be able to ascertain from such a specimen whether or not it was like the ancient “eat’s tongue” instruments, found in such numbers, and always of such similarity of shape, elsewhere. “A great characteristic of worked flints is their striking resemblance to each other in almost every country where they have been found. Individually each diluvian implement

* See *Nineteen Years in Polynesia*. By the Rev. G. Turner. We learn from this work, that the Papuans have the following tradition respecting the creation. “The first man, who had previously been stone, thought one day he would make a woman. He collected the light earth on the surface of the ground in the form of a human body, with head, arms, and legs. He then plucked out one of his left ribs, and thrust it into the breast of his earth model. Instantly the earth became alive, and up started a woman. He called her *Ivi* (according to English orthography, it would be *Evee*), which is their word for *rib*.” P. 323.

It seems to us that this remarkable tradition, coupled with the fact noticed in the text above, namely, that so remote and isolated a race of human beings should feel it to be a duty to perform the rite of circumcision, is a significant illustration of the Scripture truth—that God “hath made of *one blood* all nations of men,” (Acts xvii. 26); and that it refutes the theory of the learned Professor Agassiz—that the different races of men are originally distinct and separate creations; each peculiar race having sprung from a “Specific Centre,” remote and apart from every other *specific centre*.

may be considered an accident: but when viewed collectively, and it is seen that the chips have been taken off in the same places and in the same manner, presenting identical forms, obviously the result of identical intention, we are irresistibly led to the conclusion that the hand of man has done it. Wherever they have been found, whether in the east or in the west, in the north or in the south, they resemble each other in form, though they may differ in finish.”*

This identity of form surely implies application to a common purpose; while the wide distribution implies the general desire and aim to accomplish that purpose; as though the accomplishment of it was enjoined by some legal enactment,—human or divine. What the purpose was we have here ventured to conjecture: and have we think accounted, in a reasonable manner, for what has hitherto been a phenomenon of a very perplexing kind to antiquarian and pæleontological speculators, namely, the accumulation of such numbers of worked flints in geological strata where the remains of the men who worked them are not to be found. We submit that these remains must be sought for in situations *above* the deposits in which the flints are imbedded,—in soil of an immensely less remote age, on which the workers themselves lived, and there fabricated the implements which were afterwards buried in the lower beds whence they have now been dug.

It is stated that, in excavating for these implements, no trace is discoverable of the superincumbent soil

* *Anthropological Review*, vol. I., p. 82.

having been previously disturbed. But the flints may have been imbedded centuries even before the time of Moses; and surely water, percolating for between three and four thousand years, would have consolidated the earthy materials sufficiently to have obliterated all such traces ages ago. It must be remembered too that the superincumbent soil must have greatly increased since the period referred to,—the original depth of the buried implements having been very much less than that at which they are now found.

The discovery of a solitary skeleton, really human, here and there, at the same depth, should such discovery ever be made, ought to excite no surprise. A man who had long exercised the priestly function, and been eminent for piety, might have had the honour conferred upon his remains of interment in the same bed with the instruments of his sacred office.*

It is impossible to foresee, and anticipate what objections may be made to the views here submitted to candid consideration. It may perhaps be said that deep excavations could not be executed with the stone implements at command. This may be true. But the use of sharpened flints, as cutting instruments, does not necessarily imply unacquaintance with metallic tools. The ages of stone, and bronze, and iron, are

* The minimum length of time necessary to fossilize an embedded bone is confessedly a matter of great uncertainty. "It is now ascertained that bones of recent animals, introduced into old deposits, may assume, in a comparatively short time, the condition of the bones of extinct animals."—*Notes on the Antiquity of Man. Anthropological Review*, vol. I., p. 68.

by no means of sharply defined limits. It is well known that stone implements are employed, even at the present day, among tribes quite familiar with iron, and possessing articles of that metal,—a material, however, too costly to be generally used instead of the more easily accessible stone. Besides; instruments of a particular material, that from time immemorial had been employed in the performance of the sacerdotal duties, would be very likely to be retained in use, and continue to be fabricated, long after the introduction of a superior material for secular purposes.

If, however, the views here advanced, should be shewn, upon good and sufficient grounds, to be untenable, and that the worked flints found in the old gravel-beds of Abbeville, Amiens, &c., are indisputably the fabrications of pre-Adamite creatures, then we affirm, for reasons already given in the foregoing essay, that to pronounce these creatures to have been human beings is a conclusion far too weighty for the premisses to support; that, however closely such a creature may have approached to Adam in physical structure, he was immeasurably below him in psychical and spiritual endowments. The Scripture does not state that Adam was unlike every previously-created being in bodily conformation. It does not say,—“Let us make a new physical organism,” nor even, simply, “Let us make *man*.” But the words are—“Let us make man *in our own image*.” And God breathed into *him*, (*that man*) the breath of life.

“And MAN [*that* man, not the pre-Adamite] became a living soul.”

This is the MAN,—the man of the BIBLE, in whom the human family feel, we presume, the deeper interest, and not the brute pre-Adamite creature which certain anthropologists dignify with that appellation. The origin of the one is revealed to us from above:—it could never have been discovered by digging for him below. With the other creature, however, the case is different. According to the president of the Anthropological Society, who imagines him to have existed, “the origin of [*that*] Man is a question of physical science which can have no light thrown on it by authority or tradition.”

But what light has physical science hitherto thrown, or is likely to throw hereafter, even upon *his* origin? No indisputably authentic remains of this supposititious pre-Adamite man have ever been discovered in the drift in which the worked flints attributed to him are imbedded. And even, as is very likely, if a solitary skeleton *were* to be discovered in the same stratum,—what then? Would the presence of one dead man in any place necessarily imply the former existence, in that place, of a community of *living* men, working their flint implements on what was then exposed soil? On the hypothesis of a pre-Adamite race of men, there might be no difficulty in accounting for his *presence*; but, on the same hypothesis, there would be very great difficulty in accounting for the *absentees*:—what has become of *them*? How much more likely, either that

a corpse was interred there, as suggested above, or that some poor lonely wanderer upon the upper surface, long ages ago, had slipped into a cleft, now closed, and there perished !* We submit that satisfactorily to establish the pre-Adamite theory, the workmen should be found in abundance as well as their works.

A solitary jawbone, reputed to be a human fossil, was extracted a short time ago from a flint-bed at Abbeville ; and, in consequence, great stir was made about “ the fossil man of Abbeville,” and the hatchets found near him. The late lamented and eminent Dr. Hugh Falconer, with other distinguished men, took immense pains in the investigation of this matter on the spot. The results were communicated by Dr. Falconer to the *Times* (April 25, 1863), and these are his conclusions :—“ First, the flint hatchets were pronounced by highly competent experts (Evans and Prestwich) to be spurious ; secondly, the reputed fossil molar was proved to be recent : thirdly, the reputed fossil jaw shewed no character different from those that may be met with in the contents of a London church-yard. The inference which I draw from these facts is that a very clever imposition has been practised by the *terrassiers* of the Abbeville gravel-pits—so cunningly clever that it could not have been surpassed by a committee of anthropologists enacting a practical joke.”

It is quite possible, however, that the specimen may be genuine after all. It is repudiated solely because it is not

* See the footnote at page 213.

of the same vast age as the *drift* in which the flints are deposited, though it may be as old as *the flints themselves*. Or, if the hope of obtaining the large reward offered to the “navvies” for the discovery of relics of this kind,—and which is known to have operated on their ingenuity to a great extent, enabling them to fabricate ancient flint hatchets in any number that may be wanted,—if this hope impelled the unscrupulous (so alleged) but sagacious “navvy” in question to transfer an old jawbone, from a neighbouring grave, to the grave of the flint implements, he may unconsciously, and by sheer good luck, have actually brought into juxtaposition the *work* with so much of the very *workman* who executed it.

Be this, however, as it may; it is certainly hard upon the poor navvies to withhold from them their promised reward, merely because they cannot make the bones they find older than they are. As to the particular bone in question, we cannot concur in Dr. Falconer’s conclusion that it was unquestionably spurious. It seems that “on the 28th of March M. de Perthes was summoned to the gravel-pit of Moulin-Quignon to examine, *in situ*, what appeared to be a portion of bone projecting from the cliff of the section close to its base. The specimen was carefully detached with his own hands, by M. de Perthes, and proved to be the entire half of an adult human lower jaw. . . . If the jaw proved to be authentic, and came out of the alleged position, it indicated man, by an actual bone, at a period of extremely remote

antiquity." The jaw proved peculiar from "the odd conjunction of unusual characters it presented. . . . But Mr. Tomes's abundant collection brought the matter speedily to a point. From the pick of a sackful of human lower jaws, yielded by an old London churchyard, he produced a certain number which severally furnished all the peculiarities of the Abbeville specimen, although *not one of them shewed them all in conjunction.*" "We then," says Dr. Falconer, "proceeded to saw up the detached molar found at Moulin-Quignon. It proved to be *quite* recent; the section was white, glistening, full of gelatine, and fresh-looking. There was an end to the case." But why all this careful and rigid examination of the specimen, if there had not been the complete absence of every indication of its surreptitious introduction into the deposit whence M. de Perthes—one of the most experienced persons in Europe—extracted it with his own hands? The fact is, the bone was not old enough,—it was clearly *not* pre-Adamite; theory required that it should be :—it was therefore spurious.

We terminate this work with the following observations, (referring to topics discussed in the preceding pages), by a philosopher of the highest reputation.

NOTE (page 173).

In reference to Recent Speculations on the Different Races of Men.

“In thus reviewing the evidence elicited by the disclosures of American archæology and ethnology, I have pursued the previously recorded researches with no favourite theory to maintain, but have anxiously striven to arrive at an impartial decision as to what are the legitimate deductions from the evidence. The determination of the relations which the man of America bears to the European or Asiatic man is felt to involve such important results, that this very fact has helped to impede the progress of truth. The assailant, has, perhaps, felt emboldened at times by the very gravity of the issues imperilled by his attack; while the adherents to a faith in the all comprehensive brotherhood of man, have rather entrenched themselves in their own strongholds than fairly met their opponents on the open field of scientific enquiry. Scientific truths, whatever be the interest they involve, can only be determined on scientific grounds; and on such only has any attempt been made to base them in this work. But if an inquiry thus honestly and impartially pursued—like a problem wrought out by algebraic notation—brings out a result precisely corresponding to conclusions already determined by wholly independent proof, it cannot be unacceptable, even to those who stand in no need of its confirmation. Such has been my experience

in the present inquiry. The subject presented itself in novel aspects ; the results, whatever they should prove to be, were welcome, since I had no preconceived theory at stake ; but as the subject has expanded before me, I have more and more been convinced how needless a thing it is to supplant ancient beliefs, from too ready a yielding to the seductive temptations of novel, and seemingly simple hypotheses, which commend themselves to the judgment by their apparent solution of difficulties.

“It is little more than three and a-half centuries since the men of the Old and New World met face to face. For unknown ages before that, America had been a world within herself, with nations, languages, arts, and civilization of her own : and the whole tendency of that later American science, which also claims to be native, though the product of a race of European descent, has been to make of the red man a distinct race and species. I have approached the inquiry pursued in the previous chapters with an earnest desire to avoid prejudging this question, or testing it on other than purely scientific evidence. But the result has been to satisfy me that there is no ground for separating the American from the Asiatic man ; but that, on the contrary, greater difficulties exist in reconciling our belief in the descent of all men from a common stock when we proceed to compare some of the diverse tribes and nations of the Asiatic continent, than any that interfere with our acceptance of the dogma that the Mongols of Asia and America are one.

“In the ingenious speculations on the origin of species by which Charles Darwin has startled the scientific world, he remarks, as he draws his first abstract to a close, ‘the whole history of the world, as at present known, although of a length quite incomprehensible by us, will hereafter be recognised as a mere fragment of time, compared with the ages which have elapsed since the first creature, the progenitor of innumerable extinct and living descendants, was created. In the distant future I see open fields for far more important researches : Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history.’ Already the speculations of Darwin have done good service to the ethnologist, though not in the way he intended or imagined they should. They will not persuade him that the universe is a product of measured and beautiful motion, within which this earth-planet has gone cycling on according to fixed laws, until, from the simplest monad or life-germ, endless forms of wonder and beauty have been evolved, closing at length with the evolution of man as the latest and crowning work of such development ; but they may give a new force to the persuasion of many, that time and external influences supply all the requisite elements for the evolution of varying tribes from a common stock. Mr. Darwin has not succeeded, in the whole course of his ingenious argument, though returning to it again and again, in tracing the slightest indications of that favourite illus-

tration of the instability of species, the *Pigeon*, being developed out of any essentially distinct form. But he has shewn that pigeons have been subject to the influences of domestication and of civilisation for thousands of years: that one of the most favourable circumstances for the production of distinct breeds is to be traced to the fact, that male and female pigeons can be easily mated for life; and that they have been found capable of domestication alike on Northern Europe, in Egypt, and in southern India. Selecting some of the greatest of known extremes within the natural family of *Columbidæ* subject to such influence, he remarks:—‘Although an English carrier, or short-faced tumbler, differs immensely in certain characters from the rock-pigeon; yet, by comparing the several sub-breeds of these breeds, more especially those brought from distant countries, we can make an almost perfect series between the extremes of structure.’ In so far as these are well-accredited facts, entirely independent of the theory they are advanced to maintain, they furnish interesting analogies readily applicable to the so-called races of men.” (Wilson’s *Pre-Historic Man*: pp. 457—459.)

SUPPLEMENTARY NOTE.

ON THE MIRACLE OF JOSHUA.

IN a former volume* I have discussed the miracle recorded in the tenth chapter of the Book of Joshua on the hypothesis that our English rendering of verse 13, namely, "So the sun stood still in the midst of Heaven, and hasted not to go down about a whole day," was a correct translation of the Hebrew original. It is this English version that Dr. Colenso receives; and it was in reference to the impossibilities, which he alleges to be implied in the statement, that the discussion alluded to was entered upon, for the purpose of shewing that the miraculous occurrence could have been brought about without any violation of physical laws.

But since the publication of that book, I have been informed by a learned friend† that nearly two centuries ago a profound Hebrew scholar and divine—the Rev. Brian Taylor—had translated the passage referred to differently, affirming that the strict meaning of the Hebrew is—that "the sun hasted not to go down about the time of the whole day's completion," when, but for the miracle, it would have set. Its apparent stationary altitude in the Heavens, instead of lasting twenty-four hours, may thus have lasted not more than one hour,

* *Science Elucidative of Scripture*, page 175.

† Dr. Fraser Halle.

or even so much. "And the sun stood still, and the moon stayed" [not 24 hours, but only] "until the people had avenged themselves upon their enemies." Josh. x. 13.

Taking this view of the text, the phenomena could have been produced by much simpler secondary causes than those which I had suggested as competent to prolong (apparently) the stay of the sun and moon for twenty-four hours.

Everybody knows that the sun (and indeed every heavenly body) always appears to be above the horizon some time before it rises and after it sets;* the phenomenon being caused by the refraction, or bending downwards, of the sunbeams by the atmosphere in their passage through it. The greater the accumulation of air is towards the West, or the greater the superincumbent pressure, the denser will be the atmospheric strata through which the rays have to pass, in their progress to the eye, and therefore the longer will the apparent setting of the sun be delayed. Now suppose that immediately before the command of Joshua, there was an accumulation of atmosphere towards the East, or the quarter in which the moon was; the air drawn from the West, and from surrounding regions, being heaped up, forming a high atmospheric tide, while there was a low tide in the West.

The moon's rays, upon entering the protuberant mass, would become bent downwards; and would thus

* The sun's diameter, to the nearest minute, is 32', while the horizontal refraction is 33'; sometimes more.

pass into the upper stratum of the original atmosphere more inclined to the vertical than they would have done but for this superincumbent body of air: the moon would thus appear proportionally more elevated: and this apparent elevation would be further increased if the protuberant surface, where the rays entered, were more oblique to the direction of those rays, so as to increase the angle of incidence.

In this abnormal condition of the atmosphere, the moon would appear unusually high; while the height of the sun would be a little less than ordinary, because of the abstraction of air from the western region.

Conceive this high atmospheric tide—at the instant of the command—to commence flowing from the east to the west, the air in the west continuing gradually to accumulate—and that in the east to diminish, till a western tide, sufficient for the purpose, had been produced. It is obvious that, throughout the whole of this gradual process of transference, the continuously diminishing depth of air would cause a continuous diminution of the moon's apparent altitude; and that the continuously increasing depth of air, in the opposite quarter, would, at the same time, cause a continuous increase of the sun's apparent altitude. And the adjustment might plainly be such that these atmospheric causes would exactly balance and counteract the moon's vertical motion upwards, and the sun's vertical motion downwards, so that the apparent altitude of each body would be preserved unaltered till the atmosphere began to assume its normal condition;

during its return to which the sun would be rapidly descending, and would speedily sink behind Gibeon, while the moon would gradually ascend.

It is plain, from the narrative, that the sun, when the miracle commenced, was on the point of setting behind the city. We have supposed however that the moon at this time was *ascending*; but if the contrary were the case, then the two atmospheric tides, alluded to above, must have existed simultaneously, gradually rising and gradually subsiding together. And indeed it seems more probable that the moon, like the sun, would be stayed from descending, not from ascending: but whichever may have been the case, both moonlight and sunlight would have been prolonged by means of the atmospheric changes here described. We have reasoned above on the hypothesis that the moon was rising, chiefly because that is the view which presents the greater apparent difficulty.* [It is most likely that the battle took place at that season of the year when the days were short.]

It thus appears that, in whichever of the two senses the text in question be taken, the miracle may have been wrought without any of that violation, or suspension, of the laws of nature which Bishop Colenso assumes to have been unavoidable. Supernatural agency was, of course, put forth: we say "of course," because if

* The heaping up of the air may be regarded as analogous to the heaping up of the waters in the passage through the Red Sea. "The waters were gathered together, the floods stood upright as an heap." Ex. xv. 8.

the phenomena had been independent of the direct interposition of Omnipotent power, they would not have been recorded, as we find them to be, in the BIBLE. We are there told plainly enough that there was a miraculous prolongation of the day: and whether the sun hasted not to go down till an additional rotation of the earth had been completed (about a whole day), or only hasted not to go down when its time for going down, naturally, was near at hand,—a whole day being then almost completed,—in either case the Divine interposition implied no infringement of any physical law; but simply the putting forth of a power which, though not of nature, operated in harmonious concert with nature. And the atmosphere alone need have been the only instrumental means employed, in the arresting the vertical motion of the sun and moon for a short period. It is absurd to insist that the actual motions of the earth and moon *must* have been stopped to accomplish what could have been as well brought about by merely modifying the condition of the earth's atmosphere.

In what is suggested above we have considered the modification to have taken place in the upper regions of the atmosphere; but changes of temperature in the lower atmospheric strata, when they are such as to produce any considerable departure from the normal condition, are often attended with phenomena very similar to those here commented upon. In that peculiar state of the air near the earth's surface which causes *mirage* the vertical displacements of objects in the distant

horizon, or a little above or below it, are often very considerable. The Rev. Dr. Scoresby (then Captain Scoresby), in one of his Greenland voyages, once saw his father's ship, elevated in the air, and recognized it to be his, although the observer was ignorant of the fact that his father was then in those seas. But upon the two ships afterwards meeting it was found that the elder Scoresby was very many miles *below* the horizon of his son's position at the time of observation.

M. Bravais, in his able article on the Mirage in the *Annuaire Meteorologique* for 1852, relates the following :—

“ Before entering the bay of Kaaifiord, we leave on the left a little peninsula which forms the bay, and which juts out into the sea, with a uniform elevation of about a yard and a-half above the water. Beyond that, and within the bay, a schooner was lying at anchor—the hull of which rose out of the water about two yards. The land lay so that the deck of the schooner would naturally have been quite hidden from us ; yet I saw, from our distance, not merely the whole of the hull and its line of floatation, but, besides, a little of the reversed image, all of them *above* the little peninsula. . . . As we approached the peninsula, the schooner appeared to sink very rapidly behind it, and the hull became at length quite concealed from us, just as it would have been at any distance, had it not been for the remarkable refractions to which the phenomenon was due.”

The above and numerous similar instances that are on record, sufficiently shew how peculiar states of the

lower strata of the atmosphere, as to temperature, may cause the apparent elevation of objects either in the distant horizon or at a small angular depression below it. These are, of course, natural, though not very common phenomena: but their actual occurrence demonstrates the possibility of the secondary agency, in the miracle recorded in the Book of Joshua, being a natural agency, namely, the refracting powers of the atmosphere, the physical conditions necessary to the production of the phenomena, and which (so to speak) are often assumed spontaneously, having been, in this special instance, the result of the Divine command through the voice of Joshua.

There are thus two distinct ways, at least, by which apparent vertical displacement, sufficient for the phenomena in question, can be caused by peculiar atmospheric conditions, provided the appearances are intended to continue for only a short period of time; and in the work already referred to it is shewn that, by the operation of Divine Power on another physical agent,—the luminiferous ether,—the setting of the sun and moon might have been to all appearance delayed even for “about whole day.”



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Visitors to London had long felt the want of some guide or hand-book, not only to the various places of amusement, with a list of cab fares—which are the two most prominent objects to which our so-called guide-books chiefly aspire—but some work that would give them a general idea of what was worth seeing, where to put up while in London, and generally how to avoid those little unpleasantnesses incident to strangers. This want "The Brown Book" is intended to supply. The subject of lodgings is well treated, though in the first issue we are told it was the cause of "much annoyance and vexation of spirit." Several good hints have been thrown out about situation, price, and climate in regard to taking lodgings.

MORNING POST.

Visitors to London will consult their convenience by arming themselves with "The Brown Book;" and dwellers within the sound of Bow bells will find it a valuable book of reference. There are few items of local information which it will not be found to contain; and so much attention has been bestowed to render the arrangement of the details at once simple and effective that, though they are necessarily multitudinous, no difficulty will be found in arriving at the desired intelligence. It is, amongst other things, a guide to the hotels, lodging and boarding houses of London; to the various railway termini, libraries, places of amusement, picture-galleries, schools, hospitals, religious, learned, and artistic societies; and gives full and explicit directions as to situation, and such short particulars as are likely to be useful to the inquirer. "The Brown Book" supplies a want which has long been felt, and its merits will no doubt be practically acknowledged.

THE CHELTENHAM JOURNAL.

This is a particularly cheap and useful handbook, containing a mass of instruction concerning those things on which visitors to the metropolis desire to be especially informed, the same being arranged in such a manner as to be easily referred to and made immediately available. In the present edition various imperfections which existed in last year's "Brown Book" have been amended, and several new features introduced. For instance, the information with regard to the subject of "lodgings" has been remodelled and rendered more serviceable than before, and lists of the "religious and artistic societies" of the metropolis have been added. Any stranger visiting London would do well to invest a shilling in the purchase of a copy of the "Brown Book" before setting out on a journey of discovery.

CHURCHMAN.

The bare enumeration of what is contained within these brown covers is a sufficient indication of its usefulness to the dweller in London or to visitors to the metropolis,—that is, to almost all the world.

THE RUGBY ADVERTISER.

The visitor to London could not possibly invest a shilling to better advantage than in procuring this admirable little work; indeed, the dweller in the metropolis, keen though he may be, will find on perusing its pages that there is a vast deal in the overgrown city of which he is not cognisant.

BRIGHTON GAZETTE.

This is a novel but very useful book of ready reference in all matters respecting the metropolis, concerning which "young men from the country," and, indeed, numbers of the inhabitants of "the modern Babylon" themselves, are very often very much at fault.

PUBLIC OPINION.

The Messrs. Saunders, Otley, and Co. have issued "The Brown Book for 1865." Besides the very useful information which the first volume contained, the present one has in addition Lists of the Religious and Artistic Societies, Guides to the Picture Collections of the Metropolis and the Metropolitan Railway System. The same admirable arrangements are preserved which rendered "The Brown Book for 1864" so valuable as an easy reference, and we are glad to see the projectors intend adding to the information year by year.

THE MORNING POST.

This "Brown Book" is a novel attempt to furnish useful information which is not contained in the comprehensive mass of red books, guides, and directories. It is a spirited undertaking, and ought to be encouraged. The daily increase not only in the extent of London itself, but in the resort of strangers to the growing centre of the world's mighty interests, requires additional facilities of access, as well to the minor conveniences as to the higher amenities of confederate civilization. Such is the purpose of this intended half-yearly publication. Its compendious title-page enumerates the objects which it embraces; and which it proposes to place within the reach of all who can be benefitted by them. It is very complete in its list of public offices, police stations, postal arrangements, and cab stands, of scientific societies, their constitutions and times of meeting for the next half-year, of libraries and museums, of theatres and other places of amusement, of hospitals and charitable institutions. On these points its copious statements may be serviceable alike to residents and visitors. But the department of hotels, lodging and boarding houses, and of breakfast and dining rooms, is as yet very imperfect—a mere skeleton without integuments—an outline framework which has yet to be filled up. The proprietors of these establishments were unwilling to give the particulars asked of them; they declined to advertise the rent of their rooms, or insert their names in a book of which the nature and object were unknown to them. In this branch of their labours the compilers of this work aimed at too much; the terms of lodgings are not fixable; they fluctuate with seasons of arrival and departure; they vary to permanent or casual inmates, to those who give trouble and to those who exact little attendance, to those who have a pendant of children, and to others who give frequent parties. Nor can the features of each dwelling be noticed; in many cases praise would be deceptive and truth libellous. For the purpose of "The Brown Book" it would be quite sufficient to state the general character of a street or square in which there are many lodgings, and the natures of its vicinity, with the numbers of these houses and the names of their keepers.* It would also be enough to say that in obscure localities the terms are low, in respectable situations moderate, but high in genteel and fashionable neighbourhoods. For a work constituted on this principle the editors would not fail to obtain all the information they want to satisfy the requirements of the public, and ensure an extensive patronage.

THE SUN.

Another ready reference book. Not a blue book. Not *the* Red Book. Not a *livre jaune*. Not party-coloured. But—a sensible, matter-of-fact, directly-to-the-purpose, plain, blunt, honest, sober *Brown Book*. A book to be published half-yearly—so that it will always convey the very latest information. A book that answers, among other frequently recurring questions, "Which is the nearest Post Office?" "How shall I find a Commissionaire?" "Whereabout is the nearest Telegraph Office?" A book so apropos that it ought to be placed so very handily for reference when required that the possessor should come at last to say of it as Charles

* This suggestion has been acted upon in the present issue, and it is hoped successfully. It will be easily understood that this department of "The Brown Book" is not merely difficult to carry out and of a most costly nature, but absolutely dependent on time and increasing confidence for its full development. With pains and patience, however, neither of which will be spared, the Editor hopes to make it with each successive issue more and more complete.

II. said of Rochester—"Never in the way, and never out of the way!" We don't know to whom it will prove the most acceptable—to the old Londoner, or to the young man from the country—to the true born Cockney, or to the unmistakable Foreigner. To every one who consults it, it will for a dead certainty prove most welcome, and all the more welcome because, we believe, perfectly reliable.

NOTES AND QUERIES.

A book containing the information detailed in this ample title-page cannot but be very useful, if the information be correct; and we are bound to state that, as far as we have been able to test it, "The Brown Book" is as correct, and consequently as useful, as any of its Red and Blue contemporaries.

THE NEWS.

This handy little publication supplies a want which has long been felt not only by strangers, but also by Londoners themselves, for it contains in a well-arranged tabular form full information with respect to the situations and specialities of the different places of amusement, public and circulating libraries, hospitals, schools, and charitable institutions of London, as well as of a great many of the hotels, lodging and boarding-houses, breakfast and dining-rooms, &c. There is also what is called a "handy list," which shows the situations of the different post offices, money order offices, cab stands, police stations, fire engines, fire escapes, and also about one thousand of the principal streets of the Metropolis. We certainly wish Messrs. Saunders, Otley, and Co. every success in their undertaking, and from the great care which has evidently been bestowed upon the present number, and the correctness of the information therein contained, we have no doubt whatever that the "Brown Book" will soon come to be looked upon as one of our most convenient and reliable metropolitan guide books.

THE BUILDER.

Under the title of "The Brown Book," Saunders, Otley, and Co. have issued the first half-yearly specimen of a guide intended to supply several wants: to show the nearest post office, telegraph office, fire engine, cab stand, and so forth, to any given street; list of lodgings, the various societies, theatres, &c. Why are the artistical exhibitions and societies left out?*

THE READER.

A GOOD idea, and very well carried out. No country cousin should come up to the metropolis without first studying its lists of hotels and boarding and lodging-houses, in which, in all cases where they were not purposely withheld, the prices of bed, board, lodging, &c., are added in a tabular form to the name and situation—the former being placed under the names they are known by, and the latter under the names of the streets in which they are located, in alphabetical order. The dinner list is on the same plan as that of the hotels; and, indeed, all the lists are as complete as one can hope to find them in a first attempt of the kind. There are lists of schools, of tutors and governesses, of charities, of literary and scientific societies, and of their meetings; of public libraries and of circulating libraries; of museums, sights, theatres, with their plans, &c.; of music halls, dancing rooms, &c., in each of which there is full and sufficient evidence of care and pains taken to make them reliable sources of information and reference. These are

* The information given on this head could not be obtained in time for the first issue. It has now been supplied.

supplemented by a "Handy List," which, in a tabular form, arranged in alphabetical order under the names of one thousand of the principal streets and thoroughfares of the metropolis, gives the whereabouts of post office receiving houses, pillar boxes, and money order offices; of commissionaire stations, telegraph offices, cab stands, police stations, &c.; so that a stranger may journey about town without the necessity of asking his way, or of making inquiries on other points, of any one. "The Brown Book" should be in every counting house and on the hall-table of all well-to-do private residences.

THE MORNING HERALD.

This is an excellent idea well worked out. Strangers in London, and even residents in a different quarter of the modern Babylon and western Peking, are continually at a loss for information about places and things. Tell them to meet you at such and such an hotel, and the first thing occurring to them is to ask or find out in what street is the hotel in question, and whereabouts is the street itself. Advise them to go to a particular place of amusement, and they often feel that their only chance of finding it is to give themselves over to a cabman. Let the dweller in the country or at Clapham have occasion to be at St. John's-wood, and there to seek a post or telegraph office and he becomes bewildered. It is the object of "The Brown Book" to put him at his ease on these matters; to tell him everything he can want to know about post and telegraph offices, commissionaire, fire engine and escape stations, hospitals, cab stands, police stations, boarding houses, hotels and lodging houses, dining rooms, schools, public charities, literary and scientific societies, public and circulating libraries, museums, theatres, music halls, and many other things. The first edition is naturally far from perfect, for it would have been impossible to make everybody who could supply the required information acquainted with the object and projected existence of such a work. Still the compilers have done wonders. All the information at all accessible in print has been carefully condensed, tabulated, and corrected. But the lists of hotels, for instance, has been, partly by the want of enterprise in the landlords or managers, rendered less complete as well in name as in detail of prices than it was intended to, and than it will doubtless ultimately be. Nevertheless, he must be very hard to please who cannot from the present list suit himself with an hotel accommodated to his means. The same remarks will apply to the lodging and boarding house lists. The dinner list—one most interesting to both country cousin and town resident—is sufficiently full for all purposes. The lists of schools and tutors and governesses, with their several specialities and terms, will save many persons a great deal of useless and frequently very unpleasant inquiry. The particulars of the charities and the scientific societies, especially the table showing the days of the meetings of the latter bodies, will be most useful; and the brief summaries of the features of the museums will prove valuable to nearly every class of visitors. The tabulated list of theatres and places of amusement is most complete. It gives the general style of the plays and sights for which each house is noted, the hour of commencement, the prices, and some miscellaneous remarks—such as the necessity of evening dress here and there, the name of the play for which the theatre has been lately celebrated, &c. Finally, there is a very clear index, reference to which will show at once the page on which the required information is conveyed.

THE LANCET.

This book will be found a useful book of reference in every commercial office.

SOCIETY OF ARTS.

This is intended as a book of ready reference to the hotels of London, with full information as to situation, speciality, &c. It also includes a notice of the literary and scientific societies, with lists of their meetings for the present session; particulars and (in some instances) plans of the theatres and other places of amusement, and an account of the various sights of the metropolis.

THE STANDARD.

It will be very strange if the present edition of "The Brown Book," imperfect as it avowedly is, should not in some measure repay Messrs. Saunders, Otley, and Co. for their enterprise in bringing out; and it will be stranger still if in its future half yearly editions it does not practically exclude all other guide books to the metropolis, for it is only half a crown,* and the use of it ought to save its price to the country cousin in a day, and to the average town resident in a week.

THE WEEKLY REVIEW.

Generally speaking, the name of a book is an indication of its contents, but not so in the present case. Why the compiler has chosen such a name remains a secret—only so far as conjecture can furnish, we imagine that there are numerous books of this kind, and therefore all suitable names have been consumed. The object of the book will be best shown by quoting the following from the Introduction: "'The Brown Book' is intended to supply several wants which have not hitherto been provided for by any of the numerous Introductions, Guides, and Handy-Books of London. Few words are required to bring home to every one the wants which every one has felt. In consequence of its vast extent, most quarters of the metropolis are as unknown to the resident in any one of them as they are to a total stranger. Both residents and strangers are continually puzzled by such questions as the following: 'Which is the nearest post office?' 'How shall I find a commissionaire?' 'Where is the nearest telegraph office?' It has not before now been attempted to give such information in an acceptable form. It is believed that the plan adopted in 'The Brown Book' of giving in a tabular form numerical references to numbered and alphabetical lists of the receiving houses and pillar boxes, money order offices, commissionaire stations, police stations, cab stands, telegraph stations, fire engines, fire escapes, and hospitals of the metropolis will be found simple and effective. Such a table, containing upwards of a thousand of the principal streets, will be found in our Handy List." Such is the information, with a few other items, this book supplies. It will be found very handy to all parties requiring such knowledge; and who does not? The price is 2s. 6d.*

THE CITY PRESS.

Every new publication is professedly started to supply "a want that has long been felt," &c. As a rule, addresses in first numbers are no more to be believed than are epitaphs. An exception, however, must really be made in the case of "The Brown Book," which is intended to supply several wants not hitherto provided for by any of the numerous Guides and Hand-books of London. In an ingeniously yet simply arranged table are given the nearest receiving house, pillar box, money order office, commissionaire station, telegraph, fire engine and fire escape stations, hospital, cab stand, and police station, to more than one thousand of the principal streets.

* Now One Shilling only.

There are also lists of boarding and lodging-houses, hotels, dining-rooms, schools, charities, literary and scientific societies, with their officers, museums, theatres, music halls, and other places of entertainment, with their style of amusement, hour of commencement, prices, &c. The work has been produced in a neat and portable form, and should be in the counting-house of every business and mercantile establishment, the public room of every hotel, and on the table of every family.

THE ENGLISH CHURCHMAN.

This work is intended as a supplement to the various guides and hand-books of London. It is, as its title-page tells us, a book of ready reference to the hotels, lodging houses, breakfast and dining rooms, libraries, amusements, charitable institutions, societies, &c. of London. The chief feature in it is a handy list, containing an alphabetical list of a thousand principal streets of the metropolis, which shows the nearest post office, pillar box, commissioner, cab stand, police station, &c. The plan is a very useful one. On some points the information is meagre, owing to the refusal of parties to give the needful particulars, but we are assured that in future editions there is every expectation that the work will be more complete and comprehensive.

THE LAW TIMES.

The difficulty which not only strangers to the metropolis, but also residents, feel when they are in search of any of the above institutions lying out of the regular track, will at once recommend this book to their notice. The author candidly admits that many of the lists are not so perfect as could be wished. For instance, the lists of the parcels offices, he tells us, are not complete, owing to objections on the part of the Parcels Company. This seems the most unaccountable. We should have imagined that they would only have been too glad to have taken this means of publishing their whereabouts. The objections of hotel keepers we can better understand. As a whole, we think this book one of the most useful that has been introduced to our notice for a long time. Its small price places its purchase within the means of most people.

THE WESLEYAN TIMES.

"The Brown Book" is the somewhat inexpressive title of a new serial, the first issue of which Messrs. Saunders, Otley, and Co. have just sent out. Its design is excellent and most useful. It is intended to be the guide and companion to both strangers and natives in this overgrown metropolis. There are tens of thousands who do not know where to find the nearest post office, or cab stand, or police station, or fire escape, or hospital. These pages supply ample and correct information on the subjects named, and also on boarding and lodging-houses, dining rooms, schools, charities, learned and literary societies, libraries and museums, amusements, &c., with a full index. The great public utility of the work will be manifest to every one; but it requires further extension to complete the plan of the book.

THE ILLUSTRATED TIMES.

This is another of the many guides to London which are sometimes so useful to provincial Englishmen, and always so bewildering to foreigners. Much of its contents may be easily guessed, such as places of public amusements and learned societies. The chief features of novelty are lists and

criticisms of hotels, so far as has been found practicable; lists of lodging-houses, breakfast and dining-rooms; libraries, "public and circulating;" and all kinds of public buildings, schools, charities, &c. The great novelty is a list, on the "cab fare" principle of tabulation, of the nearest receiving house, pillar box, money order office, commissionaire, telegraph station, fire engine, fire escape, hospital, cab stand, and police station, the "nearest" being given in columns by the side of a list of names of the principal streets. "The Brown Book" is worth looking at before the purchaser of a guide book makes up his mind.

THE COURT JOURNAL.

This useful volume contains a list of hotels, lodging and boarding-houses, dining-rooms, public and circulating libraries, amusements, &c. It is a miniature directory, in fact, and no stranger coming to London should be without so important a key to it.

THE MARYLEBONE MERCURY.

A handy book of reference, useful to every one. It supplies a want long felt and cannot fail to be successful.

THE CLERKENWELL NEWS.

"The Brown Book." Under this very curious title Messrs. Saunders, Otley, and Co. issue, one of the most useful books that it is possible to have for half-a-crown.* It commences by giving a thousand of the principal streets in the metropolis, and to each of these references is given to the nearest post office, money order office, cab stand, police, fire engine, and fire escape stations, hospitals, and such like handy information of which Londoners stand very greatly in need. The country cousin will find "The Brown Book" worth his speculative half-a-crown, for it is a book of ready reference to the hotels, lodging and boarding-houses, breakfast and dining rooms of the metropolis, with the list of prices of those establishments, which show they mean to do well by the traveller, by making known their minimum and maximum charges. All the public and circulating libraries, amusements, schools, charitable institutions, hospitals, with all their specialities, are set forth in full, and all the particulars respecting the learned societies—as offices, objects, places and times of meeting, subscriptions and mode of entering, are given for the benefit of those who may need this information, which they will find, if they try, is very hard to be acquired without the aid of "The Brown Book." The volume will take rank at once as a book which all who are about town should be acquainted with.

THE CLERKENWELL DIAL.

The Red book, the Blue book, and the Post-office Directory have not been found sufficient to supply the daily thirst of the public for information, so here they have the "Brown Book" to supplement the others. Strangers in any locality of London will find here readily the nearest place to post a letter; or to obtain a money order and get cash for one; or the nearest commissionaire or telegraph for sending a message by either; or how most quickly to get a cab to convey them to the theatre or other place of amusement. It gives full particulars about all places of entertainment, the nature of amusement to be expected, when the doors open, and the various prices of admission. Then there are lists of hotels, coffee houses, dining rooms, &c., with the tariff of charges where the editor of the work

Now One Shilling only.

has been able to obtain them, but the information under this head is very meagre, owing to the petty jealousies of proprietors. "The Brown Book" contains abundance of other information on matters about which questions are daily asked, but which cannot be satisfactorily answered without reference to bulky volumes, and very often not there. For the next issue we would suggest another useful head—the routes of the metropolitan omnibuses.

THE SPORTING GAZETTE.

This neat little volume professes to give in a small compass a variety of information not to be found elsewhere, with much that might be gathered from Directories, and some details obtainable only by visiting the institutions it treats of. The complete table of the days of meeting, and of the objects promoted by every scientific society, will be found exceedingly useful. An original feature in "The Brown Book" is the so called "Handy List," intended to direct strangers to the nearest cab stand, letter box, and telegraph station, while timid visitors can forearm themselves against catastrophes by conning the bearings of the nearest fire escape, hospital, and police station under its pilotage. The list of hotels and places of refreshment is very incomplete, owing, as we are told, to the reluctance of the landlords to furnish any information; this defect, however, will be remedied. In the meantime, if this attempt to describe all establishments which minister to the intellectual or social comfort of Londoners were well supported by those who can best aid the publishers, the yearly "Brown Book" might command information of a special value, not clashing with its namesake in Blue or Red, from which its own title sufficiently distinguishes it.

THE CHELTENHAM JOURNAL.

This book is intended to supply a number of wants experienced not only by visitors to the metropolis, but by residents likewise, who are often at a loss to ascertain the locale of the many institutions with which London abounds, or to discover at a moment's warning the whereabouts of the various police stations, cab stands, post offices, fire engines, hotels, dining-rooms, libraries, and places of public amusement. This information is here afforded in a series of lists and tables, so arranged as to be clearly understood and readily referred to. The first, which is denominated a "handy list," contains the names of upwards of a thousand of the principal streets, alphabetically arranged, with a tabulated forest of figures disposed in columns, which form an index to ten other lists which give the situations of all the receiving houses, pillar letter boxes, money order offices, commissionaires, telegraph stations, fire engines, fire escapes, hospitals, cab stands, and police stations. These are followed by lists of boarding-houses, hotels, lodging houses, and dining rooms, giving their titles and situation, the names of their proprietors, and, as far as possible, the prices charged at each establishment. These lists are, however, far from complete, owing to the disinclination of the proprietors of hotels to supply the necessary particulars. Then there is a list of schools, and another of tutors and governesses, both of which appear to be capable of considerable extension. In another section of the book we find an alphabetical list of the most important charities; and, further on, a comprehensive and descriptive catalogue of scientific and literary societies, museums, public and circulating libraries, sights, and places of public amusement, the information under the last mentioned head embracing the name of the house, the style of amusement, the hour of commencement, and the prices of admission. The design of the publication is good, but there are some portions of it which are

susceptible of improvement. For instance, in connection with the "hotels" and "dining rooms" there appears to be an attempt to go into particulars which would not only be superfluous, but tend to excite suspicion as to the impartiality of the compilers. It appears from the preface that it was intended to add "a report upon each hotel, the result of a special visit made to it," but the intention has been reduced to practice in two or three cases only, and we think it would have been better had it been altogether abandoned. Again, with regard to "amusements," only the bare facts should be given, and the remarks which are appended thereto eliminated in future editions.*

THE GATESHEAD OBSERVER.

A most useful and welcome edition to the Guide, and otherwise instructive works in connection with London, has just been issued by Messrs. Saunders, Otley, and Co., under the title of "The Brown Book." So large an amount of information (and much of it quite new) must be extremely valuable to, and, we trust, will be extensively patronised by the multitudes who throng London, and who are not unfrequently, for want of a good guide, as helpless as if they were in the Arabian desert.

RUGBY ADVERTISER.

This "Brown Book" is one which has been long needed, and appears to be the very thing required. It is a comprehensive guide to the great metropolis of London: going more minutely into details than the usual Introductions, Guides, and Hand Books with which one is so often disappointed. "The Brown Book" contains the very fullest information respecting the London hotels, lodging and boarding houses, breakfast and dining rooms, public and circulating libraries, places of amusement, charities, the scientific societies, plans of the theatres, compendium of sights, and in fact every possible thing that a stranger or any person not well acquainted with London may want to know. Another excellent feature in the "Brown Book" is—a handy list of street post offices, cab stands, police stations, fire engines and escapes, hospitals and dispensaries, telegraph and commissionaire stations: giving at a glance the nearest of each to any street in which you may happen to be—a very excellent idea well worked out. And all this information for half-a-crown !† As yet it is, of course, only an experiment, and—we can well understand—a costly one. It rests with the public to determine whether it shall become a success.

THE CARLISLE PATRIOT.

"The Brown Book" is a cheap book of ready reference to the hotels, lodging and boarding houses, breakfast and dining rooms, giving terms, prices, and bills of fare, every kind of place of entertainment and amusement, hospitals, schools, libraries, charitable institutions, with the fullest information on all points. It contains also a handy list showing the nearest post office, cab stand, police station, fire engine, fire escape, in one thousand of the principal streets in London. This book should be in the hands not only of every business man in the metropolis and lounge about town, but every traveller from the country, to whom it will afford valuable information.

* It will be seen that the greater part of these suggestions are about to be adopted. The remarks, however, as to the nature, &c., of the different amusements are found to be generally esteemed a great service to country visitors. Upon their strict impartiality will of course depend in a great measure the reputation of the book, and of this both Editor and Publishers are fully aware. In the present edition this part of the work is very greatly extended.

† Now One Shilling only.

THE STOCKPORT AND CHESHIRE COUNTY NEWS.

Under the above original title we have one of the best guide-books to the Metropolis extant. It is, in fact, a complete book photograph of the principal places of business or amusement in London, and gives valuable information upon everything likely to be necessary to the strange visitor to that modern Babylon. Some idea of the extraordinary comprehensiveness of the book may be formed when we state that its contents embrace a list of one thousand of the principal streets, arranged in tables with numeral columns of reference, shewing the nearest receiving house, money-order office, telegraph station, fire-engine and escape house, hospital, cab-stand, and police-station to each. Nor does the work simply give a dry detail of names in each of these instances. Under every head will be found pointed and pithy remarks upon the various institutions, affording an amount of valuable information not to be found elsewhere in so small a compass. No visitor to London should be without this little work, which is calculated to render the greatest stranger perfectly at home even in the heart of the "big city." We advise all persons who wish without trouble to penetrate the "mysteries of London" to possess themselves of the work.

THE WESTERN TIMES.

A new work of great value to those who have occasion to frequent the metropolis, either for the purposes of business or pleasure. It contains a reference to the hotels, lodging and boarding-houses, breakfast and dining-rooms, libraries (public and circulating), amusements, hospitals, schools, and charitable institutions of London. With such a programme, "The Brown Book," if properly conducted, could not fail to be of great service. For the first half-yearly number, the information is, of course, not so full in every respect as might be desired. The publishers complain that the novelty of their scheme has for a short time retarded the completeness of their success, but no one who glances at the book can for a moment designate it as a failure. The hotels, boarding-houses, lodging-houses, and dining-rooms, are chiefly the departments where a good deal more information is absolutely necessary; but the particulars of the scientific and literary societies, the museums and charities, are not only full, but admirably arranged. The amusements and sights, for which the metropolis is so famous, and which form its chief attraction to Young England, are classified for easy reference; and brief, but comprehensive instructions are given for the guidance of the sight-seer. The work will certainly become a standard one for purposes of reference.

THE BRIGHTON GAZETTE.

This is a guide-book, very useful to residents in and visitors to the metropolis, containing, in an ingenious tabular form, most complete information in reference to hotels, lodgings, dining-rooms, institutions, amusements, postal arrangements, cab-stands, and, in short, precisely that sort of information that every stranger in London feels the need of.

THE STOCKPORT ADVERTISER.

We have our black book of pensions and blue book of reports; and now we have "The Brown Book" of London, which will be a valuable medium of ready reference. Great pains appears to have been bestowed in its preparation.

THE COVENTRY HERALD.

This is a most useful publication, supplying several wants felt by the visitor and resident in the metropolis, which have not hitherto been provided for by any of the guides or handy-books of London.

THE BLACKBURN STANDARD.

This handy list will be found to answer fully the purpose for which it was intended, and prove a valuable acquisition not only to those residing in London, but to all whom business or pleasure may draw occasionally to the great metropolis. The information it contains is of a comprehensive nature, and such as is not to be found in any of the numerous guides and handy-books of London. The efforts made by the compilers to render the book one of easy and handy reference deserve to be crowned with success.

THE WITNESS.

This is a book of ready reference for the world of London, and a work which no one unacquainted with and intending to visit the great metropolis, should be without. It will save its possessor twice its value.

BRADFORD OBSERVER.

This portable, neatly-printed volume purposes to be "a book of ready reference to the hotels, &c., of London; with full information as to situation, speciality, &c." With all this information, its value to persons whose business calls them to the metropolis need not be pointed out.

NOTTINGHAM REVIEW.

Under this title (derived from the colour of its covers) the above publishers have issued a very serviceable handbook of London. We fancy that few visiting London, or freshly settling in it, would regret the expenditure of the price, but, on the contrary, would recover it many times in the valuable information given.

CAMBRIDGE CHRONICLE.

This a rather a strange name for a book to have, though that in itself is no reason at all why the book should not be a good one. The number of guide-books to London and its suburbs is almost infinite, and the publication before us aims at supplying a want which they have all neglected. The work is one to suit people in an emergency. We draw attention to the publication, as we think it one which may be of great use not only to strangers to the metropolis, but also to dwellers in the metropolis itself in cases when they have pressing need to seek any of the establishments enumerated.

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